

# THE Railway Surgeon

VOL. I.

CHICAGO, JUNE 5, 1894.

No. 1.

## TABLE OF CONTENTS.

	PAGE.
Announcement . . . . .	1
The Railway Hospital—by FRANK H. CALDWELL, M. D., Chief Surgeon South Florida Railroad (with discussion) . . . .	2
Color Blindness—by D. EMMETT WELSH, M. D., Surgeon Grand Rapids and Indiana Railroad (with illustrations) . . . .	8
Remedies Found of Value in Surgical Practice—by GEORGE CHAFFEE, M. D., Surgeon Long Island Railroad (with remarks by Dr. THOMAS H. MANLEY) . . . . .	11
Editorial Articles . . . . .	14
A Pioneer in Railway Surgery . . . . .	16
Portrait of Dr. S. S. THORN, President of the National Association of Railway Surgeons . . . . .	17
Railway Surgery as a Separate Branch of the Science and Art of Surgery—by EUGENE R. LEWIS, A. M., M. D.,	18
Sutures, Ligatures and Their Application—by C. M. DANIELS, M. D., Surgeon New York, Lake Erie and Western Railroad (with discussion) . . . . .	21
Notices and Reviews . . . . .	23
News, Notes and Personals . . . . .	24

MONADNOCK BLOCK,  
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## ANNOUNCEMENT.

In the last issue of the RAILWAY AGE AND NORTHWESTERN RAILROADER, of June 1, 1894, there appeared the following editorial announcement:

"THE RAILWAY SURGEON."

Of the railway associations of the country none has been more active or more successful during the last few years than the National Association of Railway Surgeons. Three years ago the association had 282 members in good standing. At the present time the active membership is 1,767. During these three years of rapid development THE RAILWAY AGE AND NORTHWESTERN RAILROADER has been the official paper of the organization; and we believe that we can safely assert that the efforts of this paper have not been without their effect in assisting the remarkable growth which the association has enjoyed. At the annual convention, however, held in Galveston three weeks ago, the association decided that it had now reached a stage where it could properly support a journal of its own creation and devoted entirely to its own and the interests of railway surgery. Arrangements have consequently been made with the publishers of THE RAILWAY AGE AND NORTHWESTERN RAILROADER in pursuance of which this company will on the 5th of June, 1894, begin the publication of a new paper called THE RAILWAY SURGEON, which will be issued bi-weekly and which will devote itself to the advancement of the science of railway surgery.

Railway surgery is entitled to distinct recognition and representation apart from the science of surgery in general. The railway surgeon is constantly confronted with cases of a class which are peculiar to railway service. As the railways have revolutionized almost every sphere of life and human activity, so they have created new classes of injuries and lesions—even new ailments of a more or less indefinite and questionable nature. But apart from its purely professional or scientific aspects the National Association of Railway Surgeons has other interests of a more commercial nature which are directly associated with the interests of the railway companies. Such questions as that of the best and most economical system of surgical service for a railway company to adopt; of the most effective ways of protecting railway companies against imposition on account of pretended injuries; of the proper sanitation of railway cars and the protection of the traveling public against disease, etc.—all these questions are peculiarly within the province of the railway surgeon. During the few years of its existence the National association has already done excellent work in the discussion and investigation of these questions. Above all it has undertaken a work looking to the securing of a better understanding and more exact definition of that amazingly elastic group of injuries which under the general names of "railway spine" and "railway concussion" are

such a fruitful source of fraud and imposition on railway companies. It will be the object of the new journal, THE RAILWAY SURGEON, to assist the association in every way in the prosecution of its work—a work which can scarcely fail to be of great and permanent benefit to railway interests.

With the publication of the new journal there will be a diminution of the space which has for the past three years been devoted to railway surgery in the columns of this paper. THE RAILWAY AGE AND NORTHWESTERN RAILROADER will still give to the surgical departments of the railways the recognition which is their due as being an intrinsically important branch of the railway service. There is much in the work which the association does which is of the greatest interest to other railway men, and of such work this paper will continue to keep its readers informed. Matters of a purely scientific and professional nature which are of less interest to railway men at large will be transferred to the columns of THE RAILWAY SURGEON, which it is the intention of the publishers to make one of the strongest scientific journals in the country as well as a valuable instrument in behalf of railway interests.

This article was intended to call the attention of railway men at large,—of managers, superintendents, counsel and others—to the new departure which is hereby inaugurated, as well as to impress upon them the value of the work which the association is doing. A more extended announcement of the appearance of the new journal was published in the same issue in the department of surgery, addressed more particularly to members of the association and was doubtless generally read. We wish however to again reproduce here certain portions of that article:

When speaking from the platform to the convention at Galveston, the president of "The Railway Age" said that it was to be trusted that members would not think that when they had ordered the publication of a journal and had appointed an editor their interest in, and work on behalf of, the journal was ended. Members must not now sit back and wait for the journal to be served to them twice a month and, when it comes, receive it in a spirit of criticism and think how much better it might be made. If they do they can very easily discourage the editor and the publishers, and go a long way to injure both the journal and the association. What is needed is that every member of the association should help. Let every member bear in mind that THE RAILWAY SURGEON is his own particular journal and personal mouthpiece; that it is of his own creation; that it is established for his benefit and is working for the same ends as he is working; that it is intended for the good of the science of railway surgery and for the advancement of the ends which are his life's work. THE RAILWAY SURGEON must not be simply one journal among many;

to every member it must be *the* journal. If members have anything interesting to report, let them tell it to the journal. If they want information, let them write to the journal for it. Above all, if they do not like anything in the journal itself or the way in which it is conducted, let them make their opinions known. THE RAILWAY SURGEON is not to be published to represent any one man's ideas, but to give the association what it wants. To attain this, members must come forward frankly and make known what their wants are and then turn to and help the editor and publisher to fill those wants. If members will thus give their individual sympathy and assistance, there is no reason why THE RAILWAY SURGEON, backed by the strongest surgical association in the world, should not be one of the leading scientific journals of the world.

Dr. E. R. Lewis, the new treasurer of the association, whose name all members of the association know and respect, writing to the president of "The Railway Age," under date of May 21, 1894, says:

"I wish you to give us a journal that all will be proud of and that will become a permanent part of our association and an ornament and a credit not only to the publishers but to the most erudite members. I feel that with the aid of all members the journal must be a success".

Of course it must. It must not only be a success but it will be the strongest factor in the permanent success of the association. In THE RAILWAY SURGEON the association will have a mouthpiece and a means of communication between members and with the outside world which will enable it to do the best possible work. Through THE RAILWAY AGE that work will still be brought to the attention and command the sympathy of railway managers. It only remains for the members themselves to assist the editor and publishers with their co-operation and good will.

We have little now to add to the above. We earnestly ask for the co-operation of all members of the national association, and in return we will endeavor to convince every member that we are working only to the best of our power for the best interests of all.

#### A Life's Work.

Speaking of the late Corydon L. Ford, the great teacher of anatomy, who died on April 4, 1894, the Brooklyn Medical Journal says:

It was not long since we received a letter from him at Ann Arbor, accompanying his photograph, in which he said: "I am now giving my fortieth annual course of lectures here, 1854-1894. This makes my 19th course: Castleton, twenty-four (two a year); Pittsfield, eight; Brunswick, seven; Brooklyn, nineteen; Ann Arbor, forty; to ladies here, eleven."

He once told us that when he was connected with the Geneva Medical School a microscope was imported to the college from France, and that when it arrived there was not a professor nor anyone else connected with the college who could put it together and use it. "And now," he said, "every first course student understands the use of the instrument."

From the day he received his medical degree, when he was appointed demonstrator of anatomy, to the day of his death he was continuously occupied in teaching, a record which we think, considering the length of time involved, is unparalleled in this country.

#### THE RAILWAY HOSPITAL—ITS NECESSITY AND BENEFITS.\*

BY FRANK H. CALDWELL, M. D., SANFORD, FLA.,  
CHIEF SURGEON SOUTH FLORIDA R. R.

A few years ago the surgical service of our railroads was regarded as a necessary evil, and was never provided for except in case of accident or injury. An organized surgical department was unknown. To-day there are over six thousand railway surgeons; and each year increases the number of railroads whose management recognize the importance of some relief system.

There are now four plans of relief in operation:

"The relief system."

"A surgical service without a chief surgeon."

"A surgical service with a chief surgeon."

"The hospital system."

With the first two divisions I have no personal experience; from conversation with members of our national association who are connected with railroads which operate these systems, and from the very able and exhaustive paper on the subject read by Surgeon R. Harvey Reed before the Association of Erie Railway Surgeons, at their second annual meeting, I am convinced that neither plan can possibly be operated to the interest of employer and employe, which should be mutual to obtain the best results.

In order that the "necessity for the benefits of the hospital system" may be brought out more forcibly by comparison we will briefly take up and consider the main points in the four divisions.

#### THE RELIEF SYSTEM.

The relief system (so called) derives its revenue from the employes by the assessment of each according to the amount of wages he earns and to his position. The lowest assessment is 75 cents per month, and the highest \$5 per month. What benefit does the employe receive? When disabled by sickness or accident while in the discharge of duty he receives benefits for one month after he ceases to receive wages. After he resumes work he can draw benefits for one month, or until the first pay day after he begins to work. How much may he draw? The smallest class receives 50 cents per day for the six working days; the highest class, who from the nature of their work are rarely injured, receive \$2.50 per day. In case of death while in line of duty he will receive \$500, but if not in line of duty he will receive \$250. There are other associations which pay a benefit for fifty-two weeks—50 cents for each working day for twenty-six weeks, 25 cents per day for each working day for twenty-six weeks, or a total of \$78—it matters not how long he may be disabled.

The employe is further entitled to surgical treatment for accidents occurring in line of duty, but in case of sickness or in case of accident not occurring in line of duty he must pay his own doctor bills; if he

\*Paper read before the third annual meeting of the New York State Association of Railway Surgeons, held at the Academy of Medicine, New York.

goes to a hospital the association furnishes the surgical treatment, but the employe must pay his board. In other words the smallest contributor, who is usually the one injured, must support himself and family, must pay for his medicines, and pay his doctor bills, out of \$3 per week.

In my opinion there is only one redeeming feature in this system, and that is that the association requires those who desire to join it to pass successfully a physical examination. I believe all railroads should require this of every employe, more especially the train crews, from engineer to flagman. Dr. Reed, who has given this system much study, will open the discussion on this paper, and no doubt will enter fully into the merits of the relief system.

#### A SURGICAL SERVICE WITHOUT A CHIEF SURGEON.

A surgical service without a professional head. Surgeons are appointed by the superintendent or general manager, who no doubt appoint the very best men that can be obtained, but the question arises, is the superintendent or general manager competent to direct and guide a surgeon after the appointment has been made? If a company wish to construct a bridge would they select the car accountant as constructing engineer? Should they then expect a successful, humane or economical relief service with a non-professional man at its head to direct its management, receive and consider reports made by its surgeons? "To medical men belong medical things." Inquire into the amount of damages paid by roads which have adopted this system, and you will find that they are in excess of those roads that have the best surgical service possible.

#### A SURGICAL SERVICE WITH A CHIEF SURGEON.

A vast improvement over the first and second divisions. The chief surgeon selects his own staff of assistants, and only surgeons of recognized ability and integrity are appointed. He organizes his department and all necessary appliances are furnished for the speedy relief of unfortunates. He can receive and intelligently consider the reports of local surgeons, and thereby be of great assistance to the superintendent in sifting the chaff from the wheat.

The great difficulty in the way of making a success of this system, especially in the south, is the fact that accidents will persist in occurring in out of the way places, where accommodations cannot be had for the injured, or if near a village or town it is extremely difficult to induce the proprietors of hotel or boarding house to receive as guest one who will cause much confusion and trouble. If you are successful in securing accommodations it will be at a heavy outlay for alleged destruction of bedding, extra attention, etc., *ad nauseam*.

The second and third divisions are an expense to the employer; there is no economy in them for the company. Enormous sums are paid out yearly for board, nursing and surgical attention to employes, passengers and tramps. The fifth report of the interstate commerce commission recites the fact that

28,267 employes and 3,227 passengers were injured during 1892—one employe to every twenty-nine employed, and one passenger for each 1,491,910 carried. What then must be the expense of those railroads who pay these bills? The writer is local surgeon for two systems of railroads terminating at Sanford, whose management have adopted this plan, and I can assure you that it is expensive and unsatisfactory. Many of the employes have expressed themselves as both willing and anxious to be assessed and treated as employes of the South Florida railroad are. As in the two first divisions, when an employe is sick or injured when not on duty he pays his own bills.

#### THE HOSPITAL SYSTEM.

The hospital department is a comparatively new division of the surgical service of our railroads. The Missouri Pacific I believe was the first railroad company to organize a hospital system, and each year adds to the list. The South Florida is the only company in the south that I have any knowledge of, which has a hospital exclusively for the benefit of its employes. While the writer recognizes the fact that different localities would require perhaps various plans of organization as to working details in a hospital system, yet the general principles underlying them are the same.

In the spring of 1882, without being cognizant of any previous organization of like character, Mr. B. R. Swoope, superintendent of the South Florida railroad, conceived the idea of establishing a hospital for the care of both sick and injured employes, and on his endorsement the management authorized such an organization. The organization consists of an executive committee and chief surgeon. The executive committee is composed of the head of each department, with the superintendent as chairman. The committee authorized the chief surgeon to organize the department, giving him full power to appoint local surgeons and arrange and perfect all details to the best interest of both employer and employe.

The necessary funds for maintenance are raised by assessment; each employe, except general officers, is assessed 50 cents per month, the latter \$1 per month. The company assesses itself \$66.66 per month. This money is collected each month, and is designated as the "hospital fund." If at the end of the month there is not sufficient money to the credit of the fund to meet the indebtedness the company donates a sufficient amount to cover voucher.

The organization of the surgical staff is complete yet simple. There are only four blank forms used—a surgeon's order blank, a discharge check, an immediate report and a monthly report. The order blank admits the patient; the discharge check discharges him when cured; the immediate report is used in case of personal injury by the local surgeon, giving name, whether employe, passenger, or neither, manner of occurrence, extent of injury and the character of dressing used. All other details are sent to the master of transportation direct by the official in charge of

the train, or in whatever department the accident may occur.

Local surgeons are at all the important points on the line of road. Each surgeon is supplied with a stretcher and necessary medicines and surgical dressings. When an accident occurs a temporary dressing is applied and the patient sent to the hospital on the first passenger train. If the injury is of a serious nature a special train is provided and the injured are brought to the hospital as soon as possible, and just here let me say that I do not think any system complete that is not provided with one or more "relief cars."

Except where necessary for the preservation of life, no operation is performed outside of the hospital. In case of sickness the local surgeon prescribes and furnishes the medicine necessary, and if in his opinion the employe will be unfit for duty for several days he is ordered to the hospital where he will receive board, nursing, medicine and medical attention until he is able to return to duty. In addition to being taken care of until fully restored to health, in case of injury the employe is paid half time while in the hospital, and if in the judgment of the superintendent or his legal advisors the company is at fault he is voluntarily tendered a just compensation for the injury received. As a result of this fair treatment the company which I represent finds itself free from damage suits.

For \$6 per year (except for the general officers, who pay \$12 per year) an employe receives in case of sickness or accident (whether the sickness or accident occurs while on duty or not) his board, nursing, medicine, and medical and surgical attention for as long a time as he may be disabled, be it five days or five years. Need I say more as to the benefits of the hospital system?

What then are the necessities for this system? This question is very forcibly answered by Dr. Clinton B. Herrick in an article published in *The International Journal of Surgery*, which I quote:

"Take the usual instance where a man is severely injured, say one or both arms or legs crushed. Is it not enough for one to be so mangled, when every move of his body adds to his misery? But no, he is usually tied up with a rope, old rags or aught else lying about, by his comrades, as best they know how, lifted into the first train, possibly some time after being hurt, with crushed members dangling behind him unsupported, sent along the road many miles in cold, damp cars, each start and jar of which almost closes the scene. Soon after he is again hustled into an ambulance and hurried to the hospital. And what is his condition when arriving there, and what chances are left for the surgeon to work on? Usually he presents a pallid, grimy appearance, pulseless, cold and stupefied, the crushed arm or leg so mixed up with clothing, gravel, sticks and the like, as not to look like anything but bloody rubbish. What untold agonies that man has endured since the receipt of his injury no one can realize. It has been my experience to bend over more than a few of such cases and say nothing can be done for this man, he could not stand an operation; he has been bled and jostled to death, and so he has died.

"Even if less severely injured persons be brought

to the surgeon, as they more than frequently are, their systems have been drained to a low ebb, the wounds have been poisoned by long contamination with dirt to that degree that a good result can only be hoped for. And how can all this be averted? By simply taking the surgeon to the patient, instead of taking the patient to the surgeon."

Is there any necessity for the hospital system? A letter addressed to Mr. B. R. Swoope, superintendent of the South Florida railroad and chairman of the hospital executive committee, requesting his views as to the necessity for, and the benefits of, a railway hospital, was answered in the following brief and concise manner:

"First a properly organized hospital service is essential, in my opinion, to every railroad of, any size, from the fact that it is almost impossible if not quite so) to secure the necessary medical and surgical attention in case of personal injury to either passenger or employe through any other channel. Further, employe can receive medical treatment in a hospital, with competent nursing and proper food, by which they are restored to health quicker than if treated elsewhere, and the company receives the benefit of having its men in their accustomed places, instead of having them filled by less competent persons.

"Second, the benefits to be derived from a hospital service are wholly mutual to employer and employe; the two are bound close together, and fully realize that their interests are common to a great extent, and each individual who contributes toward the maintenance of such an institution feels that a certain part of the responsibility connected therewith is upon him, insuring greater success than could otherwise be attained. The employes receive whatever medical and surgical treatment may be required at less expense to themselves than could be had elsewhere, and in cases where employes have no families a home is provided for their care and comfort while sick; in cases of personal injury the railroad has saved hundreds of dollars annually in settlement of claims as well as in the payment of surgeons' fees which it would be compelled to assume, it being a well known fact that the ordinary jury will decide a case in favor of the "poor" individual injured, and against the wealthy, soulless corporation, without regard as to whether the evidence exonerates the latter of all blame or not."

#### DISCUSSION.

DR. REED:—The question of relief service has been perhaps chiefly agitated in the east, and whilst it is an improvement on the ordinary system of having no chief surgeon, or a chief surgeon without hospital resources, yet at the same time the objections to the relief system had been fully pointed out. In indicating these objections, and without finding fault with the companies who think that system the best, I only wish to show other companies who are contemplating the adoption of some such system, which one is the best of those now in use. I do not wish any railroad company to think that in doing so I refer to any special line.

I have been connected with the B. & O. R. R. since 1880; first as a local surgeon in the relief department, then in 1884, practically as consulting surgeon in connection with the legal department. I have had an opportunity of watching the work of the relief system, and have done this with much interest. Whilst I do

not think it the best form which could be provided, I do think it an improvement over the ordinary system of simply having surgeons without any head. The relief systems must be judged as they are, not as they might be. As this system exists in the east, it has a very objectionable feature, viz.: having at its head a non-professional person; and therefore it does not lift the system above the ordinary system of surgeons appointed by the superintendent. The superintendents are not capable of appreciating the needs of a good surgical service, as is a surgeon specially educated and trained for this work. We must continually agitate this matter—line upon line and precept upon precept—in order to gain an important point. We would not expect a railroad company to select in a haphazard way anybody for a superintendent, or for an attorney, or for the head of the civil engineering department, because these persons must be specially qualified for the work in order to give the best results; yet the same railroads who are particular about selecting those who are to fill these departments will place a non-surgical man at the head of the surgical department, and expect as much from this department as from the others which are supervised by competent men.

Now, does the relief department give to the railway surgeon, the railroad company and the stockholders and the person injured the best results? It seems to me that it does not. The assessments made are not in proportion to the benefits which should be derived. But is it not a benefit from an insurance standpoint? It had been shown that in the case of death while in the service the benefit received was not as great as would be from the same amount invested in an accident company; if not in the service only about one-half of this amount is received, although they pay for it nevertheless. Some relief companies support their officers through the railroad company and the assessments are only used for the payment of benefits, but this has but little bearing on the question. Does the relief service give the employe value received? No, there is no provision made for the immediate care of the injured person along with his brethren and acquaintances. He may be taken to a hospital in a neighboring town, but this is objectionable. The system again is objectionable from the fact that it does not provide the necessary attendance in case of sickness or injury when he is not in the employ of the road, as is the case with the hospital system.

A week or two ago an article appeared in the Ohio State Journal announcing the fact that Captain W. W. Peabody, now the vice president and manager of the B. & O. Southwestern R. R., had introduced the hospital system on his road, and with it the first hospital car which I believe had ever been put into practice in the United States. It was a credit to the east that chief surgeon Brock has also been instrumental in adopting the hospital system on the Chesapeake & Ohio. Captain Peabody had had experience with the relief system, yet on reorganizing this division of the road he preferred the hospital system to the re-

lief system. I hope the time will come when this matter will be placed on its merits and all prejudices laid aside.

It is useless to discuss the system of railroad surgeons without a head. It has been a custom, especially in the east, because the railroads started in the east and the west naturally derived the benefit from the experience of the east. When the National Association of Railway Surgeons was organized in 1888, there were only six chief surgeons in the United States; to-day there are over one hundred, and I am glad to note that something has influenced the railways to increase the number of chief surgeons, even though the hospital system has not been universally adopted. We can rest assured that with competent chief surgeons the companies will be influenced to introduce the hospital system if experience shows that it merits introduction.

It has been my privilege to visit Dr. Galbraith and study the elaborate hospital system in use on the Union Pacific railroad. I have also visited the hospital system on the Missouri Pacific railroad. The real hospital system is found on these two roads, and on the Wabash as well as many others. On the latter the employes are assessed forty or fifty cents per month, and are supplied not only with surgical treatment and hospital facilities but with medicine so long as treatment is necessary. I understood that all the expenses of the department were paid out of this assessment. The hospital at Omaha is as fine as any that can be found in the east. When I first heard of the hospital system I was opposed to it, but after seeing how it was conducted and inquiring among the men along the line of these roads I found there was not a single expression of disapproval from them, and if put to a vote to-day I believe that at least ninety-five out of every hundred employes would vote for its maintenance. On the contrary, I found on inquiring on other roads, that while in many instances their system gave a certain amount of satisfaction, the employes did not feel that they got all that they should for their money; and further, those who had worked on other roads having the hospital system would tell you that the hospital system is greatly superior.

We should not look alone to the benefit of the employe and passenger but also to the company, and here perhaps the greatest benefits are derived. In a paper which I wrote some time ago, and as Dr. Caldwell had shown, it appeared that the number of damage suits is greatly reduced. Comparing the suits for damages reported by the claim agents of the various companies at their meetings, the difference between the companies having the hospital system, and those not having such a system is simply astounding, and is all in favor of the highest class of surgical service. If the railroad companies could be made to realize that we are not working for personal interests alone, but for humanity and the railroad companies, they certainly would adopt the best system, regardless of its cost.

DR. GALBRAITH:—I have very little to add. In the

first place I will speak about the relief system. If correctly informed in regard to it, I could only condemn it in every respect. The way in which the departments in the west are conducted is by the graded assessment of their men, as described by Dr. Reed, the sick benefits ranging as described and the death claims varying from \$250 to \$500. This is conducted I understand by an outside or independent insurance company who guarantees the railroad company that they will settle these claims in accordance with their contract, and that each employe must make a written application to become a member of this association, and that he individually must sign away his right for damages for injury outside of the death claim for \$250 to \$500. The chief surgeons of these relief societies are usually not men of much standing or reputation. They are selected by this insurance company, and receive from \$100 to \$125 per month, and must give it their entire attention.

Now, as to the department with a chief surgeon, Dr. Reed had given a very graphic description of the management of these departments, and as a whole he recommended them. Personally I would also recommend them, but there is one very serious mistake made and that is the establishing of an out-patient service. I do not believe in the hospital department on any railroad taking care of their men at their homes. Employes who are sick and who go to the hospital should have all the benefits of the hospital, but the idea of running an out-door dispensary is altogether wrong. In the first place it deprives many other men in a town from giving them attention, as they would if they were not working for the company. Again, many times men have come to the dispensary complaining of some little ailment, and when they got into the street they would throw away the medicine and boast to their comrades that they had gotten their money's worth.

The author of the paper in quoting from the International Journal of Surgery referred to a man who after being terribly mangled, was picked up and transported some distance, and was then found by the surgeon suffering from profound shock. He would have found him in the same condition if he had seen him five minutes after the injury. What more could he have done had he been there than to arrest hemorrhage and place the man at rest? I do not believe much injury is caused by transportation of men. If assistance is asked outside of the regular corps of men the injured one is invariably infected before he is sent to the hospital. I have never seen a man bleed to death from a crushing railroad injury.

DR. C. B. HERRICK:—There is no doubt that the best method was the elaborate one called the hospital system, but it is a very hard matter to get railroad men to adopt it; they are more liable to look upon an injured man as a piece of dead wood, and are very willing to have him transported in any convenient way or dumped upon the authorities of the nearest town. The matter of having a competent chief surgeon did not seem to him so important as to have a competent

local surgeon, who must have tact and skill, and who has perhaps no time or opportunity to communicate with his chief surgeon, yet he must look after his patient wherever he happens to find him. In the east the railroads are so numerous and the country through which they pass so much more thickly populated that it is not so necessary to have a special railroad hospital system as it is in the west. It is more important to have an organized staff of surgeons, either with or without a chief surgeon. If the surgeon were on hand promptly at the scene of the accident he would find he could do more for an injured person than he could do after that person had been transported a long distance to the hospital. Hardly one out of ten cases of those brought to the hospital he attended were transported in any proper manner, hardly even a temporary dressing being applied and no attempt being made to support the limb. Even though the regular surgeon could put on only a temporary dressing, still this would be a matter of importance if attended to at the spot. The hospital car he considered one of the most important points in connection with this discussion. It is very difficult to make eastern railroad officials look into this matter; they are usually only willing to appoint local surgeons.

DR. GALBRAITH thought he had been misunderstood. If the surgeon had been at the scene of the accident five minutes after an injury he would have found the patient nearly in the same condition that he did one or two hours afterward, but he would recommend that competent local surgeons be along the line to give proper scientific temporary relief. This matter of the hospital car seemed to him a fad. It might be all right on the shorter roads in the east, but on the long roads it is bound to be always at the other end of the line from where the accident occurs.

DR. HARDEN said that nothing could be done without systematic work, and a surgical system to be effective must be properly organized and must have a head, just as as much as the other departments of a railroad. It is ridiculous to talk about these hospital cars; it is hard enough to find a sufficient number of ordinary cars to carry the people. There are many railroad surgeons who are incompetent. I recall one such surgeon who attributed all his bad results to using "old instruments." Although he has a good local reputation, it is needless to say that this man does not believe in antiseptic surgery. There are many such surgeons, but if the surgical system had competent men at the head, the selection of such local surgeons would not occur. In conclusion I say, give us a surgical department with a head to it.

DR. REED said that he was now making a canvass of the roads of the United States so as to prepare a directory of the railroad surgeons of this country and of the roads having a surgical service, and he had been astonished at the number of companies which do not have a single surgeon on their lines. Out of 900 railroad companies in the United States, Canada and Mexico, not

over fifty per cent had a surgical service of any kind. On these roads when an accident occurs anyone is called in, and his services paid for. This is a very expensive and unsatisfactory method.

DR. M. CAVANA said he had never known the New York Central to pay one cent for surgical services. As the West Shore and the Rome Watertown & Ogdensburg roads have a surgical service, and are now under the control of the New York Central, it is to be hoped that the latter road will soon adopt the same plan. On the court calendar at Rome there were at one time no less than nine suits against the New York Central, while there were none against the Ontario & Western and West Shore roads. Years ago, as has been already stated, there was a surgical service on the Central which proved unsatisfactory and the system had not been again tried.

DR. LUSK said it was more necessary in the west that they should have hospitals than in the east where the roads are so long, and the towns are frequently a long distance apart. In New York State where there are so many towns and many good hospitals, it would be almost impossible to adopt the hospital system. He had been asked by the general superintendent about establishing a hospital at his town, and he had made arrangements for the care of severely injured persons in an emergency. Along the line of his road, the Ontario & Western, each man is assessed in proportion to his wages, and in cases of severe injury, such as the loss of a limb, the road is not relieved of any responsibility.

DR. CALDWELL, in closing, said the most economical plan, both to the management and the employes, is the hospital system. The system I represent is almost identical with the western system, although I had no knowledge of it at the time mine was organized. For six dollars a year the employes are treated while they are sick and injured; they are not treated at their homes, but at the hospital. Local surgeons prescribe for an emergency, but if an employe is to be sick for several days he is sent to the hospital. There is a great want of harmony between the surgeons and the management on most roads. How many local surgeons are on familiar terms with the managers of their system? He thought very few, if any. Personally, he was as familiar with the manager of his system as with any citizen of his town. He made it a point not to ask for anything that he felt sure he was not going to get. He did not believe that any local surgeons should be appointed from hearsay; the chief surgeon should be personally acquainted with each surgeon before he is appointed a local surgeon, for every chief surgeon is held accountable to the management for the condition of the surgical service.

He believed that the shock is a thousand fold more profound after a man had traveled twenty-five to one hundred miles with a mangled limb unsupported except by the rags his comrades may have applied, and that person's chances of ultimate recovery are less than if the surgeon saw him at the scene of the accident and gave him intelligent treatment. He be-

lieved that the primary treatment was the great treatment, and if this primary treatment is properly carried out, the injured person can be sent almost any distance without detriment.

The hospital system has been referred to as an "elaborate" system, but it is not anything of the kind; it is very simple and very cheap, and if the management understands it there is no question about its being adopted.

What has brought the railroad surgeon into disrepute with the management of the road is the feeling that because corporations are wealthy we must make them pay well for our services. This the speaker did not consider just and equitable; they should be as much entitled to consideration as a private individual of means.

For twelve years he had been chief surgeon, and had studied the railway systems in all of their phases, and he thought the true solution of the whole question in the east is that an aggregation of roads should have a union hospital system. There can be no question that in a railway accident a person suffers more from shock than in any other form of accident, and the surgeon needs special training and experience to treat such cases successfully, and therefore if these injured persons be transferred to general hospitals along the line, the surgeons there are not competent to treat these cases unless they have had experience with railroad injuries. Until the union hospital system is adopted there will be these frequent suits for damages. In eleven years his road had never had a suit for damages. If the companies treat their men well they will find that the men will reciprocate; that they will work for the companies more faithfully, and when they have recovered from their injuries there will be no question of a suit for damages.

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Words, Words, Words!

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We had occasion to state recently that the technical term of the iodide of thalline was "tetrohydroparamethyloxicholine," which is short compared with some other terms. There is an old name for chrisophanic acid termed "dioxymethylanthraquinone." An instrument used for breaking ossified callus in falsely united fractures bears the name of "dysmorphosteopalinklastes." The impurity of the cocaine called ecgonin is technically simply "methoxyethyltetraphdropysidine carboxylic acid," while in chemical terminology the pure article is called by the name of "methylbenzomethoxyethyltetrahydropyridinecarboxylate." The last term is probably the longest word in the English language and contains 52 letters. —Times and Register.

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The faculty of the Ohio Medical University have recently purchased and donated to the trustees of the Protestant hospital of Columbus, Ohio, a valuable tract of land lying immediately south of the university building, on which will be erected this summer a large hospital with facilities for 150 beds.



## COLOR BLINDNESS.

BY DR. D. EMMETT WELSH, SURGEON G. R. & I. R. R.

The importance of recognizing visual defects as to form and color has become so pronounced that railway officials are subjecting their employes to a rigid examination in inquiry as to those defects. Refractive errors are visible, yet color defects are not, and as such, tests for its examination are only made visible by proofs already given.

Monographs on this subject have been published, yet it has been a long established and recognized fact among ophthalmologists that such an error as color blindness does exist, not only as a congenital defect, but also in what might be termed an acquired form. This acquired form may be dependent upon a diseased condition of the brain, or injuries to the head, the excessive use of alcohol and tobacco, disease of the optic nerve, or as a result of a long and protracted illness, such as typhoid fever for example.

Monographs have been published by professor Wilson of Edinburgh, professor Holmgren of Sweden, Dr. B. Joy Jeffries, Boston, Mass., and Dr. W. Thompson of Philadelphia, Pa. To Dr. B. Joy Jeffries belongs the great credit of bringing this subject to such a prominence among railway officials and to the public, and of local and general governments insisting upon the examination of the color sense, wherein applicants are placed in positions important to the safety of the traveling public and to themselves.

Color blindness as a congenital defect is not amenable to any form of treatment. When of the acquired form it is amenable to treatment.

It does not necessarily follow that those affected with color blindness suffer from other visual defects, for as a rule they have a quickness of vision which is not equaled by those not affected by color blindness.

Their form perception is recognizable, but their perceptive faculty is defective, not in the sense that colors do not appear to them in their hue or tint and by name, so that they will be able to call them correctly, but in the selection of colors bearing an important relation to the colors shown. While they are distinctly seen they are not seen in the hue and color of the normal-eyed.

The color blind may be totally ignorant of his color defect and know the grass is green and the leaves of the trees are green, yet he is unable to distinguish the cherries on the tree when ripe.

The most common defect of color blindness is green-red blindness, the violet-yellow blind is so rare that it may almost be considered not to exist.

The red blind sees all the colors of a darker hue than they are. The same of green blind as to green, and both confound these colors with each other and with gray and brown.

Hence all colors containing their defective one will be grayish in character, and this in proportion to their physical defect. Theoretical discussion as to the

probable causative factor in the production of color blindness would carry us too far into the physiological and mathematical laws of light, while the opponents differ. Yet a cursory examination as to the defect existing in the receptive organ, the eye, or the perceptive organ, the brain, is admissible.

The Young-Helmoltz theory supposes that there exist in the eye three kinds of nerve fibres.

Stimulation of the first produces red.

Stimulation of the second produces green.

Stimulation of the third produces violet.

Light excites these three kinds of fibres in varying degrees according to the wave lengths.

The red perceptive fibre will be most strongly stimulated by light of the greatest wave length. The green, by light of medium wave length, and the violet by the smallest wave length, and each spectral color excites all three kinds of fibres.

If we get a ray of light formed by mixing red, green and violet and all the fibres equally excited, we get a sensation of white. If a wheel is taken and painted in equal portions, red, green and violet, and revolved rapidly, you will get a grayish appearance or white.

The other theory is that there exists a cerebral centre for this defect. The difference in the intensity of the color or light is what those affected by defective color sense depend upon, and by that comparison they learn to distinguish between the different colors and they will often name the colors correctly; but in distinguishing between the different shades of the same color they expose their defect.

In the examination of railway employes, care should be taken lest exception be made to the plan of conducting said examination and to your ability to prove the existence of the defect. The following is the plan of examination conducted by myself, in which I have examined 1,140 employes of the roads herein mentioned, and the tests for form perception of their acuity only apply to former employes and not to new applicants; in all new applicants the visual acuity and hearing must be normal and no diseased condition existing of the eye or its appendages.

I was appointed by the general manager of the Grand Rapids & Indiana railroad (Mr. J. H. P. Hughart) to formulate plans for the examination of all railway employes, for their color and form sense and hearing.

The same form of examination was adopted by the Chicago & West Michigan railway, Detroit, Lansing & Northern railroad, and Saginaw Valley & St. Louis railroad. I am notified by the division superintendents by card to examine an applicant, which is done in the following manner:

The applicant is requested to write his name in full, his age, and the position for which he applies. This is done to find if the applicant can write.

His distant vision is then taken, using Snellon's test cards at twenty feet. His range is taken, using Snellon No. 1 reading. His field of vision is taken by extending the arms. This is recorded.

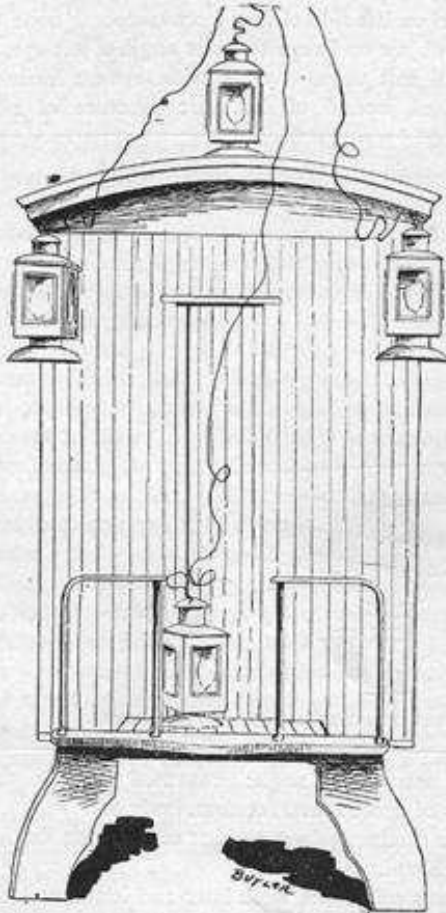
His hearing is tested by the speaking voice and also by stop watch.

His color-sense is tested by first examining by Holmgren's method. A skein of yarn from the pile of worsted is shown him, which is green, and he is told to pick out of the pile of worsted any color that looks like the one shown, either lighter or darker, or any color having a resemblance to it.

Then a rose is shown him, when he is told to pick out any color—that or lighter.

A red is next shown him, when he is told to pick out any color that looks like it, or darker.

I then examine the applicant by Thompson's method of Philadelphia, using the color and yarn on a stick,



CABOOSE END, SHOWING RED, GREEN AND WHITE LIGHTS.  
(Used by Dr. Welsh in his tests for color-blindness.)

and to each skein there is attached a number, and a record of that is made.

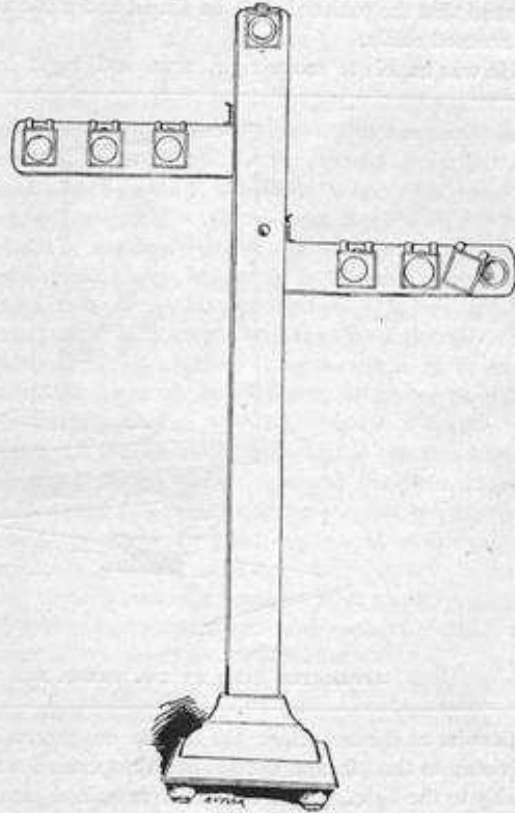
I then hand the applicant some of the confusion colors which he matches, and the result is recorded.

Having passed these tests successfully the examination is complete.

If an error has occurred, I then examine the applicant by the light test, using for that purpose the rear end of a caboose car which has been built for me, and on which are placed lanterns in form identical to those used in the train service, and placed on the side and top, and on the platform the colors shown from it are red, green and white; the applicant is placed forty

feet away, and when the light is flashed, as electricity is used, having a globe of eighteen candle power, I find that the same error is made as found by Holmgren's method; if green-blind, their entire inability to distinguish that color, and proving conclusively to the managers and the most skeptical observer the correctness and importance of the observation. Following this the semaphore is used, placing at the side of red, green or white, the confusion colors of glass taken from Venetian colored glass, when the error of naming the same is well pronounced.

During the examination I found many who were amblyopic, and for whom I examined each eye singly, with a view of finding the same error to exist as to that of form, and in none did I find the color sense defective.



SEMAPHORE WITH DIFFERENT COLORED GLASS.  
(Used by Dr. Welsh in his tests for color-blindness.)

After the examination is completed, I notify the superintendent as to the result, and send to the surgeon-in-chief, Dr. George K. Johnson of this city, my report, which is filed away, while I retain a copy of the same.

All applicants with trachoma are rejected.

All applicants with chronic discharge from the ears are rejected.

All applicants whose vision is not 20-20 in one, and 20-40 in the other eye, or whose vision is not better than 20-40, is rejected.

Whole number examined, 1,140. Number color-blind, 45. Rate per cent, 3.94.

Whole number defective, 96. Rate per cent, 8.42.

The following cases are illustrative of the importance

of conducting these examinations after serious injury and severe illness.

I am indebted to Drs. Catlin and Wooster for their histories.

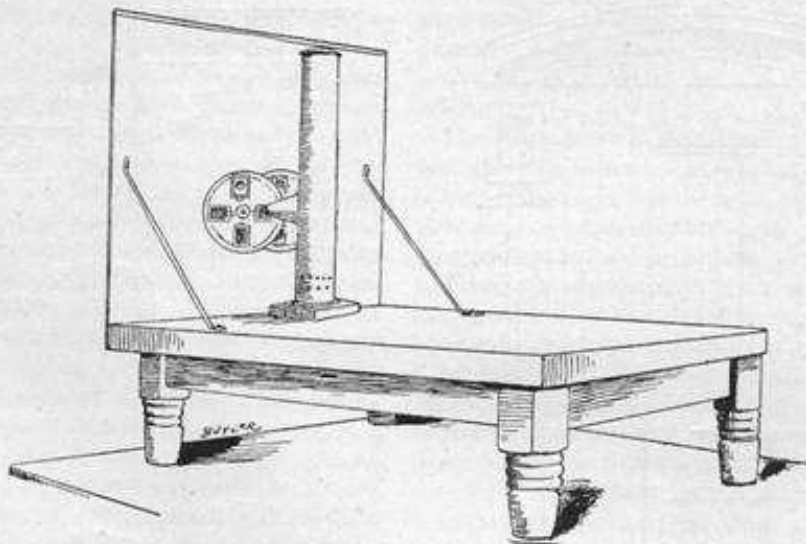
Dr. Catlin was called to see Mr. H., age 33, a locomotive engineer, on September, 1893. Mr. H. was alarmed about himself on account of nervousness and inability to sleep. There was no elevation of temperature, but his pulse was full and slow and tongue heavily coated. The doctor attributed his condition to his having been working extra time, and in consequence been irregular in his meals and in obtaining rest.

He was ordered to rest in bed, and was given ordinary doses of bromide to allay his nervousness, and a brisk cathartic. On visiting him the following day he learned that the patient had been stupid and could not be aroused easily.

He was unable to move right arm and right leg

been under the constant use of the iodides, and his color perception is improving.

Case number two was that of James McDonald, engineer on D. L. & N. R. R., who was hurt near South Lyons at 4 p. m., March 9, by his engine being "ditched," caused by a wash-out. I saw him at his residence, 196 Sheldon street, soon after his arrival; he was a strong healthy man, aged thirty-six; had been in the company's employ a number of years as engineer and this was his first accident. His face was much disfigured and swollen; a careful examination revealed the following injuries: Double fracture of left clavicle, one near acromial juncture, the other three inches from sternum; the broken bone was depressed as if driven in by direct force; an incised and lacerated wound on left side of face from temporal bone to left angle of jaw on line with outer angle of left eye, dividing all soft tissues in its wide extent; incised and lacerated wound of left ear; fracture of rib, left



APPARATUS USED BY DR. WELSH FOR TESTING QUICK PERCEPTION AND COLOR SENSE.

unless he used extra effort; the tongue on protrusion deviated to the left, and the left pupil responded sluggishly to the light. This condition remained nearly the same for two days, when he gradually improved from the stupor, but could not talk plainly and there was considerable hebetude of mind. On the fifth day after the onset he was able to be dressed and taken to his home where he remained several weeks and returned to the city quite improved but not entirely well.

The time from the onset to the time of being able to use right arm and leg perfectly was about three months, and at the end of this time the hebetude of mind had not entirely disappeared. In this case there was a history of syphilis.

This case was undoubtedly one of gradual effusion. I had previously examined Mr. H. for his color and form sense on February, 1893, and found them normal; when in January, 1894, I again examined him, I found him to be pronounced green-blind. He has

side near outer angle; contused wounds on both sides of head, arms, forearm, body and legs. There was a discharge from the ear of a serous fluid, mixed with blood.

I was called one week later and found no laceration of membrani tympanum, but the drum membrane normal in appearance and total deafness in the left ear, the discharge having ceased. The discharge from the ear, while not a copious one, was tinged with blood all the time, and the serous exudate would seem to indicate a fracture in the fibrous portion of the temporal bone. After recovery from the injuries received, I again examined him and found him totally deaf in the left ear.

On examination of the vision I found vision left eye 20; lenses would not improve. Vision right eye, 20/20. Color sense right eye normal. Color sense left eye completely gone, and he had with it no realization of color, save to yellow and white.

Now in this instance, as the ophthalmoscope did not

reveal any disease of the fundus, yet we have only his own statement that the left eye had formerly been normal, and—as stated by him—he had tried them; this does not prove conclusively that this condition was a resultant of the accident, but rather favors such examinations, which are only too important.

#### REMEDIES FOUND OF VALUE IN SURGICAL PRACTICE.

BY GEORGE CHAFFEE, M. D.

In college most of us were taught that before taking up a special line of study we should have at least ten years of general practice. My paper is not intended as a plea for specialism, still I have considered it best to mention that topic in opening this discussion. No one, especially since abdominal and brain surgery have become so popular, can practice surgery to any extent with success without a fair knowledge of general medicine. On the other hand, the general practitioner must keep himself well trained in the diagnostic points of many diseases which call for prompt surgical treatment, or in some cases his patient is very soon beyond the power of both physician and surgeon to save.

Diagnostic skill is only acquired by study and experience. First, take time to make your diagnosis; after that the selection of proper remedies should not be a very difficult task. Webster says, a remedy is that which cures a disease; any medicine or application which puts an end to disease and restores health. For convenience we may safely say that all medicines are remedies, but all remedies are not medicines. The knife, curette, intubation tube, the plaster jacket and brace, the catch forceps and ligature are all remedies, but they are not medicines. Murphy's button is a remedy of great value, but it requires a surgeon to prescribe and administer it.

He who makes an early and correct diagnosis in a case of abscess of the ischio-rectal fossa, and promptly applies the proper remedy—the knife—will not only restore his patient to health but very likely prevent the formation of an ugly fistula which is sometimes quite difficult to cure. These remarks apply with equal force to fracture of the skull, appendicitis, and many other affections.

Since the advent of the antiseptic period in preparing our traumatic cases for an operation for the first dressing, much time is required to properly cleanse the injured parts and their surroundings. For some time past it has been my practice after finishing my first dressing of a case to examine the patient's tongue. This I often find heavily coated, with edges deeply notched from pressure against the teeth, and the breath is characteristic of one whose liver is torpid, bowels constipated, and consequently whose stomach is foul. This glance at the tongue will in some cases show that our cleansing process should not be confined to the external surface and injured parts alone, but that it should be conducted with as much care on the inside as on the outside.

For this inside cleansing, castor oil or citrate of

magnesia may answer for some, but for the majority I have found nothing to answer so well, especially after an accident, as calomel and soda, followed the next morning by either citrate or sulphate of magnesia. Of calomel and the bicarbonate of soda I usually give from five to twenty grains of each, divided into two or three doses, always in capsules, and always to be followed by the citrate of magnesia before breakfast on the following morning. I never give calomel without soda and the citrate of magnesia, and whenever I prescribe it I caution my patient against the use of table salt, vinegar, pickles, lemonade, or any acids for at least four days. Given in this way I have never seen any ill effects follow the use of this remedy, but I have in two or three cases, where there was no action of the medicines used by noon of the day on which the magnesia is given, been obliged to order a copious enema. I am sure that the prompt use of the latter remedy has in these cases prevented my patients from being salivated. There was some soreness of the gums with the calomel breath. This condition, however, was soon relieved by the use of a boracic mouth wash of five grains to the ounce. If my patient is not strong, I give a light dose—from three to five grains; if he is of average weight and strength I give from eight to ten grains, but if he is an extra strong man weighing from two hundred to two hundred and fifty pounds, and perhaps one who is using beer freely, from fifteen to twenty grains will not be too much to do the work well. For my own protection it may be well to add that it is only in rare cases that I find it necessary to give the largest dose; still, I have gone as high as thirty and even forty-five grains in divided doses. These cases, however, were not surgical, but the result in each case was all I could ask for. I believe that for both its local and general action, we have at hand no other remedy that will compare with mercury in these cases of severe traumatism, and especially where the brain and its coverings are affected.

There is a group of cases in which this remedy cannot always be given at first. I refer to concussion of the brain, to compression, and to fracture at the base of the skull. These cases are sometimes found lying in a heavy stupor for days after the injury. I do not think it is best to put calomel in the mouth, or even in the stomach of such a patient. The danger of the patient being salivated is too great. In this class of cases I usually wipe the mucus from the tongue and place upon it one or two drops of croton oil. If dropped directly upon the clean tongue, this remedy is quite certain in its action, no matter what the condition of the patient may be. In a day or two if the patient improves, and the calomel is still indicated, it may be given in glycerine syrup or perhaps in a capsule. In whatever dose calomel is given it should be kept moving by a saline.

#### FOR PAIN AND SHOCK,

There is no question but that morphine, atropine and strychnine administered hypodermically are of great value in relieving the pain and shock which follow the crushing of an extremity. Morphine is

indicated both for the relief of pain and shock. Its action on the coats of the arteries, allowing them to dilate after having partially paralyzed their nerve supply, and in this way warming the entire body and promoting reaction, should not be lost sight of. Morphine should be given with the greatest of care, but it might well be given many times where our patients are now obliged to go without medication.

The action of atropine, like that of morphine, is too well known to admit of discussion.

The use of strychnine after a severe injury and before an operation, is highly recommended by some, while others as strongly condemn its use. My experience with this remedy is not extensive enough to warrant me in expressing an opinion either way.

When the hot-water, bag is not at hand, bottles should be filled with warm water, and where the patient is to be transported or even placed in an ambulance, a number of them should be placed about the limbs and body and covered in with blankets.

#### COCAINE.

Of late there has been no remedy given to the profession of more value than cocaine, and I mention it more for the purpose of saying that I think it should be classed, known and prescribed as one of the most dangerous remedies we have. All remedies should be given with care, but we have in our hands no remedy which requires to be given with more care than cocaine. All of us know how and when to use this powerful remedy, and I think it is far better for us to feel our way, and if necessary make a second light injection, than to make the first a fatal or even an overdose. This medicine, I believe, is capable of destroying life at a fearfully rapid rate, and I have found that a very little of it will reach a long way.

In the after-treatment of cases of drowning I have had excellent results from the use of croton oil, one or two drops placed on the tongue, especially where they remain unconscious for a long time. Another remedy I have found to aid in clearing the mucus from the congested lungs in these cases is Hoffman's anodyne, from ten to fifteen drops in a drachm of water every hour. Some of our most serious wrecks have occurred where a train goes through a bridge, and it is for this reason that I mention these two remedies. Some of the unfortunate passengers are beyond help when taken from the water, while others may be resuscitated, and if these two remedies are at hand they will be found of value.

For the same reason I mention the use of nitroglycerine hypodermically. After a wreck a portion of the train is often destroyed by fire. Some of the passengers may die from suffocation alone, while others might be saved if the proper restoratives were at hand. Nitroglycerine is used by ambulance surgeons where people are taken from burning buildings, also with those found unconscious in their rooms from the effects of escaping gas. At a wreck, if a flask of spirits of camphor is placed in the hands of an intelligent assistant, much good may be accomplished with it. I have found that if applied over the

top and at the sides of the head, it will check a nervous headache in a very few moments. The tincture of arnica is another domestic remedy that may be used freely, and if placed in the hands of the right person, it will go far toward soothing the injured and prevent some from making complaints of neglect on the part of the surgeons.

#### FOR STIMULATION.

In closing deep cavities and in repairing extensive injuries by granulation, there are many remedies in use, but those I have become most attached to are the boracic douche, iodoform gauze, balsam of Peru, and the curette.

Boracic acid is considered safe, and I believe it is an excellent remedy. I use it in many ways—for the hands, in the douche, the eye wash, the gargle, in ointments, as a dusting powder, and in so many ways that I have found it to be a remedy which I cannot do without. Applied in the dry state to sensitive parts it will sometimes cause slight pain. To relieve the pain vaseline may be applied over it, or it may be washed away by using the douche. As a soothing lotion it is quite equal to the sugar of lead wash. After cavities and pockets have been cleansed, and if necessary the curette has been used, I do not, as some recommend, dust with iodoform powder, but I do pack with iodoform gauze. Whenever the process of repair comes to a standstill, I add the balsam of Peru to the gauze, either brushing the parts with it and packing as before with dry gauze, or saturate a piece with the balsam and lay it over the surface, if extensive. In some cases there comes a time when a stronger stimulant is required. Here the curette is indicated, and it should be used and kept within reach when dressing these cases. Although I classed the curette as fourth in speaking of stimulants, I regard it as the leading remedy when indicated. It is wonderful to note the changes in a cavity at the next dressing after careful but thorough use of this instrument.

#### POULTICES.

They are, I think, best made of flax-seed meal. The virtue of a poultice is in its heat and moisture alone. To possess and retain these qualities, it must be liberal in size, and not be at all suggestive of our present "hard times." As a poultice is being applied a lump of vaseline should be placed in the center of it. This will prevent its adhering, make its removal quite easy and less painful from tender and sensitive parts. The drying and cooling of a poultice may be prevented somewhat by placing over it cotton wool and over that oiled silk, and still over the silk an easy bandage.

#### PLASTERS.

For some time I have used more of the plaster known as goldbeater's skin than of any other variety. It is soft, flexible, and light and may be applied and worn on almost any part of the person with but slight notice. It is also quite transparent. In cases of burns on the hands, arms and face by electricity, I often use this plaster for one day at a time, alternating with the bichloride gauze spread with vaseline.

To apply goldbeater's skin with ease requires experience. If you first moisten the plaster and then undertake to apply it, you will be surprised to see your sheet of plaster changed to a small ball, and persist in adhering to the tips of your fingers. If the parts to which you wish to apply the plaster are not moist, they should be made so with a boracic solution and the plaster applied in the dry state, when a little pressure will bring it in contact with all the parts. This plaster may be removed with less disturbance to the granulations than anything I have used; in fact, it may be often washed away with the douche alone.

#### BLISTERS.

To draw a blister I use only the fly plaster made by Seabury & Johnson, and to the surface of this I sometimes add croton oil. This I have never had fail to blister in from two to four hours. To "fill" a blister I use a flax-seed poultice, yet some still use the warm cabbage-leaf. After removing the epidermis, if there is an excess of serum or perhaps a few drops of blood standing on the surface, I remove this with pads of gauze. I then spread the bichloride gauze with vaseline, and apply direct to the blistered surface, changing this dressing twice daily for a few days. If a garment is to be worn over the blistered part, absorbent cotton and a bandage should be applied over the gauze.

The report of remarkable cures with new remedies has become so fashionable that for a time I hesitated about writing of our *old friends*. I was afraid that I might be considered too far behind the times. These remedies have served us faithfully whenever called upon, and they deserve better treatment than I have given them. If I succeed in stimulating a more systematic use of some of these remedies, and a more careful use of others, I shall feel that the purpose of this paper has been obtained.

#### DISCUSSION.

DR. THOMAS H. MANLEY of New York City:—I think you will all agree with me that no paper will be read before this association of more practical value than that of Dr. Chaffee, for the reason that it brings up the question of the importance of general medication in traumatism. The time for discussion is limited, and I will cut my remarks very short, simply referring to a few of the more important points touched upon by the author of the paper.

First, the use of the mercurial preparations. The profession as a whole, or those of us who are more particularly engaged in surgery have, I think, become convinced by this time that a solution of corrosive sublimate of sufficient strength to act as a germicide is a destructive fluid. It has been practically excluded from all serous cavities. It is a drug of very great power when given internally or hypodermically or endermically, by means of plasters and ointments; it possesses two powers in a very high degree, namely: first, a prophylactic power preventing inflammation, and second, an antiseptic power subduing inflammation. In my service at the Harlem hospital we are seldom without a case of fractured skull, and when we employ

the mercurial solution after trephining it is almost invariably followed by an acute meningitis. If, instead, we use sterilized water, and give calomel internally, inflammation is prevented and almost no mortality follows.

As regards the use of opium, strychnia and atropia in shock, it seems to me, sir, that of late years we have been doing rather too much in these cases. In the vast majority of cases railway accidents result in two classes of injuries. There are injuries local in character, as where a wheel passes over an arm or leg, and the brain is not effected. In those cases there is almost invariably more or less hemorrhage and by giving drugs of great power like opium, strychnia, etc., there is much risk of poisoning our patient. This fact should not be lost sight of. Speaking in a general way, it is better not to use any of them. If the limb is placed in a proper position, the pain usually is not very great and opiates can be dispensed with. I have seen a number of cases in which the ambulance surgeon, in accordance with modern teachings, has injected one-quarter grain of morphine in Magend's solution, and when the patient reaches the hospital the pupils are contracted and he has other symptoms of morphine poisoning.

Strychnia has lately been brought to our attention as a tonic of the striated muscular fibres. It has a marvellous effect on the heart's action, but I have been afraid to give it in sufficiently large doses to produce that action, because it does not limit its power to the cardiac muscles. I have seen very dangerous phases of pharyngeal muscular spasm follow the use of the drug.

Just one word regarding cocaine, which I consider one of the greatest boons introduced into medicine. If appropriately given it is able to reduce by fifty per cent the cases in which general anaesthesia was formerly called for. It is very valuable in the treatment of injuries of the skull; in such cases the brain is usually more or less congested and by means of cocaine you can reach the brain without producing any constitutional symptoms. Dr. Chaffee referred to the danger that usually attends this drug. I have employed it for all the performances of all the usual operations, excepting the major amputations, and only in one instance have I seen untoward symptoms follow, and that was owing to carelessness. It must be carefully employed, and a wise precaution is to first give your patient a few drinks of whisky. Cocaine itself is a heart stimulant, and where it is given in such doses as not to produce intoxication it is wonderful how much can be accomplished with it.

With reference to boracic acid: This drug can hardly be referred to as an antiseptic, unless it be a saturated solution; in weaker solutions, say ten grains to the ounce, it possesses healing properties, and as such serves a useful purpose.

Dr. Chaffee's paper is a very useful one. Of late we have been taught too much, in accident cases, to look at the limb rather than at the man. Look at the man; watch his pulse; watch his general condition. Mechanical surgery is going too far in the way of cutting and trimming. If we give nature a chance and study more carefully the power of drugs we will have made a very decided gain.

# THE Railway Surgeon

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**THE RAILWAY SURGEON**

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—IN—  —THE—

**OFFICIAL JOURNAL**

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OF THE

**National Association of Railway Surgeons.**

**H. F. ROBINSON,** - - - - - **Manager.**  
**R. HARVEY REED,** - - - - - **Editor.**

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In the paper by Dr. Frank H. Caldwell, which we publish herewith, and in the discussion which followed the reading of the paper at the meeting of the New York State Convention of Railway Surgeons, stress is laid upon the fact that a serious obstacle to the more general extension of the hospital system upon our railways is the idea which railway managers have—and which is a perfectly natural idea for anyone to entertain in a superficial view of the question—that a hospital system is an elaborate and expensive luxury. The facts that a hospital system, when properly adjusted, is not elaborate but is simple, and that it is not an expense but an economy, cannot be too strongly insisted on or too widely advertised. The testimony as to the success of the hospital system where it has

been rightly planned and well conducted is overwhelming, and the success is not a merely sentimental one but is a success in dollars and cents.

Of course the same system is not equally applicable to all railways, nor is the need of it (or the room for it) as great in one section of the country as in another, but the evidence in favor of the principle is too strong to be ignored, and some adaptation of it—whether by the union of different companies in joint hospitals or by some other means—can be made suitable, it would appear, to almost any conditions.

In his annual report to the Galveston convention the retiring treasurer of the National association presented the following tabulated statement of the kinds of surgical service employed by the railways of the country. The statement, it will be seen, covers 147,704 miles of line, the total railway mileage of the United States being about 180,000 miles:

	MILES.	SURGEONS.
Railways without a surgical service.....	17,088	with 0
Railways with a surgical service and no chief surgeon.....	35,138	with 1,391
Railways with a surgical service and chief surgeon.....	45,281	with 1,882
Railways with a relief system.....	13,446	with 691
Railways with a hospital system.....	36,751	with 1,502
<b>Total.....</b>	<b>147,704</b>	<b>5,466</b>

There is much that is encouraging in this showing; but at the same time it indicates, as Dr. Reed said, that "the work of the National Association of Railway Surgeons has only begun."

One of the chief tasks the National Association of Railway Surgeons has before it is the work of securing the general adoption on all railways of the most approved systems of surgical service. It is difficult for individual surgeons to obtain reforms on their individual lines, but by the co-operative action of the association great good can be done. The most complete arguments, with all available statistics and reports, should be compiled and be persistently used. We shall be very glad to receive articles and communications upon the subject, with information as to the systems in use on different lines and the measure of the success of these systems, as well as any suggestions as to the best way of securing reforms. It is a work in which **THE RAILWAY SURGEON** will cooperate with every means in its power.

The growth of the National Association of Railway Surgeons has been more rapid, probably, than that of any other scientific organization which has been established in this country. There is yet room for expansion, but the organization may now be said to have fairly attained to the full stature of manhood and from this time on it should be capable of doing its best work. At the recent meeting at Galveston much valuable time was consumed with other matters than the reading and discussing of papers; but the experience was one which every society must expect to go through at some time early in its existence. The papers which were not read at the convention will all be pub-

lished in full in this journal, and railway surgeons throughout the country will have the opportunity of reading them and discussing them through these columns. Such discussion is cordially invited; and those taking part in it will have a larger audience than they could have had in the convention hall. If everybody will help and everybody will take an interest in the work which is going on, this year ought to be the most successful which the National convention has seen, and the Chicago association of 1895 will be the most largely attended and the most valuable to the railway service and to the science of surgery which has yet been held. it will also attend strictly to business.

The account given by Dr. D. Emmett Welsh in his paper, published elsewhere in this issue, of his method of examining railway employes for color-blindness, will be read with interest. Dr. Welsh's system, as will be seen, is very complete and has proved most satisfactory in practice. The plan was first formulated for the use of the Grand Rapids & Indiana railroad and has since been adopted by three other companies.

The necessity of examinations for color-blindness among railway employes, and especially among engineers and other employes in the transportation department, upon whose quickness and accuracy of vision in distinguishing lights and signals the safety of so many lives and such vast amounts of property depends, is coming yearly to be more clearly recognized among railway managers; but the examinations are of little value unless thoroughly and systematically conducted. The completeness of Dr. Welsh's system cannot but commend itself. Out of 1,140 employes examined, the doctor shows that 8.42 per cent discovered defectiveness and 3.94 per cent were color-blind. These figures in themselves are a sufficient argument for the necessity of the tests.

The paper which we publish was prepared to be read at the Galveston convention of the National Association of Railway Surgeons, but owing to lack of time was read only by title. Dr. Welsh is a member of the executive committee of the association.

They were wise words which Dr. Thomas H. Manley concluded his remarks on Dr. Chaffee's paper. Dr. Chaffee had said:

The report of remarkable cures with new remedies has become so fashionable that for a time I hesitated about writing of our *old friends*. I was afraid that I might be considered too far behind the times. These remedies have served us faithfully whenever called upon, and they deserve better treatment than I have given them. If I succeed in stimulating a more systematic use of some of these remedies, and a more careful use of others, I shall feel that the purpose of this paper has been obtained.

And Dr. Manley in closing his remarks said:

Dr. Chaffee's paper is a very useful one. Of late we have been taught too much, in accident cases, to

look at the limb rather than at the man. Look at the man; watch his pulse; watch his general condition. Mechanical surgery is going too far in the way of cutting and trimming. If we give nature a chance and study more carefully the power of drugs we will have made a very decided gain.

This is wholesome doctrine; and doctrine which needs preaching nowadays.

In presenting this first issue of THE RAILWAY SURGEON, the publishers earnestly ask its readers for suggestions and advice. We shall be glad if every one will sit down at once and write to us—to congratulate us if he conscientiously can, and if not to point out wherein, in his opinion, we fail. It will readily be understood that the first issue of a new journal cannot be as good as the journal will subsequently become; it can be little more than a suggestion and a promise of what is intended. But the information which we want is whether we are starting upon the right lines—and if not, what it is that is needed to make THE RAILWAY SURGEON what it ought to be.

Some of the medical publications of St. Louis and Kansas City, respectively, are saying very impolite things of each other over a trouble which grew out of the last meeting of the Southwestern Convention of Railway Surgeons. Hush, gentlemen! It is not the province of newspapers representing the profession to stir up ill-will and foment discontent. The business of a scientific publication is the advancement of science, as we understand it; and to this end it should labor to allay animosities and promote good will. No cause benefits by quarrels, and the press which has a cause at heart should be an instrument of peace.

The official proceedings of the Galveston convention of the National Association of Railway Surgeons have not yet been received from the stenographer, but they will be published in subsequent issues of this journal as soon as received.

#### NOTICE.

The secretaries of all state and local associations of railway surgeons are requested to send us at once a list of the officers of their respective associations and the date of their next meeting, as well as a statement of how often the meetings are held. It is our intention to print and keep standing in every issue of the THE RAILWAY SURGEON a full list of such associations with the above mentioned details regarding each. Any other information or notices addressed to the members of particular associations will be gladly received and published. The assistance of the officers of all such associations is solicited in making our record of them as complete as possible, and in helping us to interest the members of all these societies in the work which the national association is endeavoring to do.



## A PIONEER IN RAILWAY SURGERY.

We regret to note the recent death of Dr. W. T. Barnard of Washington, D. C. Dr. Barnard may be looked upon as one of the pioneer railway surgeons of this country. We do not consider the system which he inaugurated as the best, but when it was put into operation it was a great advance over the average surgical department of railroads at that date. Dr. Barnard gave the question of the relief system a great deal of attention and was the founder of that system on the B. & O. R. R. In 1886 he wrote a very exhaustive article on the "Relation of railway managers and employes," in which he said:

The problem how to secure the most effective and harmonious relationship with their employes is one of rapidly growing importance in the minds of those managers whose duties bring them into close contact with the rank and file of railway service, and is also beginning to force itself upon the attention of investors of this country as it has already largely done in Europe.

It is generally recognized at home and abroad that only through the betterment of their present physical condition and surroundings can a body of permanent, satisfied railway servants be secured; yet the path to success in such an enterprise is strewn with many difficulties, the primary one in this country arising from the absentee ownership of our great railroads, and the difficulty which a body of stockholders, or their representative directors, have in recognizing the needs and feelings of the rank and file operating their properties—living, as they do, far from their lines, or, if near, immersed in pursuits that do not bring them together. The ownership half of the railroad world—in the United States, at least—certainly knows little, and reckes less, of how the employes live. True, no difficulty would probably be experienced in getting investors in railroad securities to admit, in glittering generalities, the desirability—even necessity—of bettering the condition of those upon whose energy, honesty and fidelity they rely for dividends; but when confronted with any systematic measures for the accomplishment of this result, which apparently involves an expenditure, they "back water" with alacrity.

After an exhaustive discussion of the relation of the employer and the employe in which he quotes largely from English statistics the doctor closes his monograph by saying:

Railroading is rapidly advancing beyond the boundaries of a mere business, and into the dignity of a profession requiring extensive knowledge of many branches of science, technical training of a high order, and already requires a devotion to corporate interests from its staff officers and many subordinates that necessitates the sacrifice of their independence, and all opportunity of securing competence in other channels, while it has no branches or departments in which intelligence, energy and scrupulous honesty are not required. And as of the great armies of railroad operatives only a few, comparatively, can gain wealth or competence, the great majority who give to their work equal devotion and their full measure of ability yearn for recognition in their sphere, and in no more effective or acceptable way can they be rewarded than that in which the Baltimore & Ohio Railroad has recognized the self-abnegation and faithfulness of its servants.

There are few intelligent railroad managements that will not fully admit that, as the result of proverbial improvidence, their employes are, as a class,

discontented, migratory, and exceptionally difficult to reach with moral and economical teachings; and they must clearly perceive, in words of a recent writer, that "there is a marked tendency to trust to luck in the future for themselves and families instead of making provision ahead, which exercises a demoralizing effect upon the whole character, and directly affects the interest of their employers." Yet, though they are prepared to admit that this fact makes it both right and a duty of the employer to interfere to correct the evil, as far as it is possible to do so, and that "if men need to be made provident, and to guard against adversity in sickness and old age by compulsion, then compulsion should be used, they are naturally slow to force an issue not absolutely vital, and which they fear may deprive them of help at time of need."

It will be seen by this that Dr. Barnard was far in advance of the average railroad surgeon at his day, and did much to agitate the question of railway surgery, and more especially that department of the service which provides for the employe relative to his protection when sick or injured. While we do not believe it is prudent for railroads to run an accident insurance company, Dr. Barnard deserves a great deal of credit for the earnest and untiring work he accomplished in the upbuilding of railway surgery and the benefit of the employes. The system which he advocated is not what we consider the best and most approved for the present day, but it has many good features, and he did an immense amount of good work.

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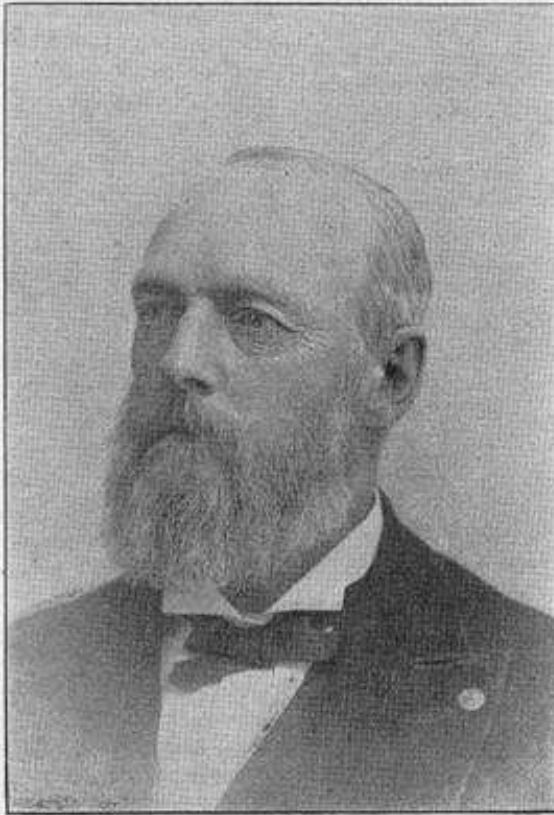
 Why Physicians Are Underpaid.
 

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No one questions the fact that saving a man's life is ordinarily a matter of more importance to him than winning a lawsuit involving a million, or even twenty million dollars; and yet the lawyers in the one case would doubtless receive many thousands of dollars, perhaps running up into the millions, while the physician in the other would be considered exorbitant in his demands if he placed the pecuniary value of his services at a paltry fraction of the sum cheerfully given to the legal advisers. The tourist captured by Sicilian brigands does not hesitate to give twenty thousand dollars under the threat that failure to do so will surely result in the amputation of his nose. He would give ten times as much, if he had it, to save himself from so horrible a mutilation. But should a surgeon, by a skillful operation, preserve the same organ of the same tourist from the destructive influence of injury or disease, the probability is that, should he fix his monetary compensation at so large a sum as five hundred dollars, he would be regarded as almost as much of a robber as the Sicilian brigands, and that even many of his fellow practitioners would look at him with that degree of envy which the obtaining of such a fee would be likely to excite. To be sure, in the one case there is no alternative. If the money is not promptly paid, the nose goes; while in the other there are many surgeons who will gladly do all in their power to save the threatened proboscis for a much less sum than five hundred dollars. The patient knows this, and therefore he rebels; but few will

question the assertion that if he is able (and on this point hangs much of the ethics of medical fees) he should pay the surgeon who saves his nose by skill and kindness as least as much as he gives the man who proposes to cruelly deprive him of it.—From

"It is better to have a physician for a confessor than a priest. You can tell the priest that you detest mankind; he answers: 'You are not a Christian.' The physician gives you a dose of rhubarb, and you love your fellow-being. You tell the priest that you are tired of living. He answers: 'Suicide is a crime.'



SAMUEL S. THORN,

President of the National Association of Railway Surgeons.

"What Should a Doctor Be Paid?" by Dr. W. A. Hammond, in North American Review for June.

◆◆◆  
**The Difference.**

In her little book called "Pensées," the Queen of Roumania offers the following comparisons between theology and physics:

The physician gives you a stimulant and immediately you feel life supportable."

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 There were 640 members registered at the Galveston meeting, a decrease of 124 over that of the Omaha meeting. A great many members were in attendance at the Galveston meeting who did not register.

## RAILWAY SURGERY AS A BRANCH OF THE SCIENCE AND ART OF SURGERY.\*

BY EUGENE R. LEWIS, A. M. M. D.

As the snowflake toppling from the highest mountain's crag, gathering strength at each onward step from its environment till we find it the almost irresistible mass moving upon the surroundings with Herculean force, so we find surgery of to-day, starting from the most obscure and unscientific source, now wreathed in science and fortified by art till it stands the wonder of progress in the arts and sciences of to-day. Its rapid strides are more than wonderful to those of us who twenty-five years ago drank at the Æsculapian fountain, beneath the guardianship of the Nestors of our much loved profession of that date, but the dogmas and theories so much relied upon then have given way to the easily demonstrated truth, and we must now stand upon a pathology proven, not conjectured, and a physiology in many respects so different from the old. Demonstrated facts have raised us to a science, and our work of to-day certainly proves the art. And we are not "clinging to December while the earth is in her June." Ancient surgery, as it has come down to us of the present day, presents many varied hues and relations to the sciences and arts of to-day, and railway surgery, like all offshoots of a parent stem, has not failed to have its presence questioned, not by the mother, but by most likely the senior offspring of the living family of to-day. It can be accepted without question that no art ever existed without a demand, and that science is and can only be founded upon truth. So the science and art of surgery, based upon truth and demand has to-day found a fixed place among the arts and sciences, and as that place could only be fixed by a demand, so now we are confronted by a most urgent demand for an art, based upon a science, bearing specially upon the demand made, for the special and emergency work the outgrowth of an entirely new industry which is so rapidly encompassing the world. If we keep pace with the age in which we live, we must "be up and doing" and I do not hesitate to say that the work done by this branch of surgery will compare most favorably with any branch of that great science and art which we all so greatly honor and highly praise. To at once properly appreciate the magnitude of an injury, it is imperative that we be familiar with the source of that injury; not that any surgeon may not be able to properly appreciate an extremity crushed off, a skull fractured, or one of the long bones broken, but the great force brought to bear in all railway injuries can but deceive the non-specially educated in this class of injuries. I have personally interviewed many experienced railway surgeons and listened to their rehearsal of railway injuries by the score where experienced physicians and surgeons had overlooked the gravity of what may be

termed the minor accidents of railway surgery. These mistakes are not made because the physician or surgeon is not qualified to practice his profession, but most often on account of an improper realization of the forces at work which caused the injury, and a mistake of this kind rarely fails to be brought to light, owing to the environment of all railway injuries. And I cannot properly convey to you my ideas as to the great necessity and importance of care and experience in every railway accident, for so important is such care and experience, not only for the patient's good, but for the good of all, that I firmly believe such conditions entitle this branch of surgery to be considered a special branch of the practice at least. The same general principles must underlie this as other branches of surgery, most prominently among which I may mention military surgery; and although military surgery has been for years recognized as a special branch of surgery, I claim it has no other prior claim to recognition other than antiquity over railway surgery. I am prepared to believe that wars and the injuries inflicted thereby had much to do with the origin and development of surgery. And it has taken time and experience coupled with necessities to develop surgery in its various branches, and not least may be mentioned railway surgery, with its great demands of the present day; but few armies ever boasted of such numbers, and then rapidly decreased and disorganized, while the army of auxiliaries to the railway service are increasing and have enlisted for life, thus relieving railway surgery of any spasmodic phases, but offering opportunities for crystalizing itself into the gem of gems of traumatic surgery. Surgical authors on both sides of the Atlantic have already dignified railway surgery with newly-coined phrases which were never dreamed of before a railway track was laid, and too often dreamed of, in my opinion, now that many miles of track have been even relaid. I do not belong to that class who believe that molecular changes occur in healthy organisms by the continued jar of the rail, but I belong to that class who believe molecular changes occur from diseased conditions, either acquired or hereditary, on or off the too often abused benign rail.

Antecedent and acquired history without perceptible lesions must in the most universal number of cases clear up the hidden malady that is too often laid upon the imaginary pernicious rail. A differentiation in these cases I conceive to be the task of an expert. In no industry with which I am familiar is there so fertile a field for deception, as is offered to the man overtaken by accident upon a railway. So fertile is the field that for the time being many persons even fool themselves, and when freed from the railway complications really awake to be themselves again.

The influences of the mind over the body in many instances is nothing short of phenomenal, and, strange as it may seem, this condition actually complicates the task of the honest surgeon, to what extent in many cases I feel it is impossible to tell. When you have normal function in all appreciable structures of the

\*This paper was read before the Railway Section of the first Pan-American Medical Congress, held at Washington, D. C., on Sept. 7, 1893, and has not heretofore been published.

body, and yet have to deal with conditions which can only be expressed, not shown, then it is I feel that railway surgery differs more widely from all other branches of surgery and requires the astuteness of a clever physician or surgeon to decide. The man caught in a railway accident often reminds me of a man who carries a large accident insurance and cannot be convinced he is really well till the accident company has his receipt for all claims against the company. In stating matters of this kind I call upon all railway surgeons of experience to review their own observations, and I feel that those not familiar with such work can hardly appreciate the great frequency of their occurrence, and under such conditions I am constrained to believe that railway surgery stands without a peer; but, gentlemen, aside from this phase of our surroundings which present such a congeries of symptoms, I would call your attention to the great multitude of physically injured upon our many railways in the United States alone—about twenty-nine thousand killed and injured during the last year. Of this number a little less than three thousand were killed; these figures refer to employes only. Of passengers 293 were killed, and others injured numbered 2,972, thus showing what a vast amount of surgical work must have been involved. In the attention to 40,910 killed and injured in twelve months (these figures were compiled by our president, Dr. Brock), making an average of 3,409 per month or 113 per day or about five every hour, we see the vast amount of emergency occurring in a special industry whose environments certainly entitle their injured to that expert service which educated experience alone can give the surgical attendant. The president of the Medico-Legal Society of New York, Mr. Clark Bell, in a paper read before the National Association of Railway Surgeons at Omaha, Neb., June 2, 1893, said: "Every railway should have its surgeon. He is a necessity as much as its lawyer, its president or even its superintendent. Both professions of law and medicine are now a necessity for the proper management and conduct of a railway." Possibly but few men in this country are better fitted to pass judgment on the railway surgeon than Mr. Clark Bell, and if we concede these statements to be true (and certainly we all do) then how more than important it is that this man, the railway surgeon, should be especially fitted for his great responsibility; his mistakes in the management of his case can not be carried to the superior courts for proper adjustment, for already the end has been reached so far as the patient is concerned, the time for the exercise of proper skill has passed and repair is impossible—unwarranted impairment or the grave shuts out all relief. Again, this same jurist recommends, "That a section upon railway surgery be formed in that society (the Medico-Legal), under a general chairmanship to be annually chosen, with a board of vice-chairmen, composed of lawyers and railway surgeons, selected from various sections of the country." And suggested that a joint committee of conference be named by the National Association of

Railway Surgeons and the Medico-Legal Society with power to agree upon a place and basis of organization, and I am happy to be able to say those committees are now not idle, the fruit of their labors we hope soon to be able to chronicle. This Medico-Legal Society has upon its rolls to-day many members of this section, some of whom I can only name here, viz.: Dr. G. P. Conn of Concord, N. H., Dr. Nicholas Senn of Chicago, Dr. Eads of Texas, and others whose great interest in this branch of surgery must sooner or later crystalize into the useful gem which will aid in adorning the crown of railway surgery of the Nineteenth century. Specialism in surgery, we know, dates back to the time of Hippocrates, if not much further, for the Hippocratic oath, as given in Dunglison's practitioners' reference book, must convince all not already convinced. The New York Medical Journal in reviewing the volume of transactions of the meeting of the National Association of Railway Surgeons, held at Old Point Comfort, Va., in May, 1892, made this startling criticism, viz.: "This volume contains a record of the proceedings of this vigorous organization at its meeting at Old Point Comfort, Va., in May, 1892, as well as the papers that were presented for the consideration of the meeting. The papers were on various topics of interest to the railway surgeon, though the majority, as might be imagined, were on surgical subjects."

How a reasonably intelligent paper upon railway surgery could fail to be a paper on a "surgical subject," I cannot comprehend, for it certainly must be surgical from the nature of the subject dealt with. Genito-urinary surgery, gynecology, ophthalmology, military surgery, etc., etc., have long ceased to be questioned as specialisms in the practice of surgery, and when we compare the importance and demand of the various specialties in surgery I can admit none to stand upon more rational ground than railway surgery, and its maximum weakness can be found only in its youth. And the necessity for its rapid development is so great that its real growth is far in advance of its age, and its importance and real claim to existence I am proud to be able to say have been thoroughly canvassed and overwhelmingly recognized by this, the greatest medical congress of the Western Hemisphere. In discussing this question I have not felt it necessary to call attention especially to the different forms of *force* in producing the injuries or pathological conditions in which we come in contact, producing the various traumatic lesions with which we as surgeons have to do, of necessity greatly aid in the proper diagnosis and an intelligent prognosis. Who can compare the environments of the surgeon of to-day with one hundred years ago, to say nothing of one thousand years ago? Old Galileo pacing his dungeon cell was not afraid to say, "She moves, yes, she moves nevertheless," and so it is with the science and art of surgery. The limitation of the human intellect and an early limit to man's physical endurance must of necessity specialize as the field grows greater, and when we compare the present

with the past, can we see any other solution save specialism? The splitting up of the practice of law into the specialties is but the necessary outgrowth of an enlarged field of law, and the practice of any special branch must be the practice of law. So, a comparison of the two professions might, at least, be instructive, if not convincing; and an essay upon the law of evidence is of necessity an essay upon law, so when our New York friend states that at the meeting of railway surgeons most of the papers were upon "surgical subjects," I hope all will declare the analogy complete.

We certainly all realize that "the mills will never grind with the waters that have past", so we must utilize the present and we vie with each other as to who can best work and best do; so specialties in every department of science vie with each other, and I claim that if the specialist is not more successful in his own special sphere than the man who spreads over the entire domain of his profession, then the specialist is a failure, and his presence is not needed or desired; but, on the other hand, if he is and can be of more service, then he is needed, and the demand legitimatizes his presence. And if there be not a demand, he rises and falls like a bubble on the water, passing back into the whole unseen and unfelt.

I concede that history has not yet recorded railway surgery as a permanent branch of the science and art of surgery, but time only is needed for such record, I feel assured, and the claim to such recognition has been made, and the leaders of this great congress will have said to the world, "We recognize railway surgery," and upon the records of this congress railway surgery has its floor and these records pass into history bearing the tidings of the now living, not dead, and we can assure you that six thousand surgeons in the states alone stand ready to prove the wisdom of your action. History tells us that in Borehaave's day he undertook to state in one sentence all that was known of medicine, and need I refer to the medical section of this great congress to verify the great progress made since? Certainly no one would claim for railway surgery more than a branch of the great surgical tree that has grown and developed from an insignificant beginning in the tiny twig, which to-day stands the giant oak with railway surgery as one of its top-most branches drawing strength and knowledge from the parent stem. As that master of American surgery, Samuel D. Gross, used to so often say, "Twas indeed an ignorant son who could not teach his father something." So may we once more verify the truthfulness of the adage and prove a help to that science and art to which we all so devoutly cling, and work to add our mite to the beauty and grandeur of the whole.

Shock, which plays so important a part in all injuries, should receive special attention from the railway surgeon, for as has been so aptly and plainly shown by the chief surgeon of the Missouri Pacific railway, other conditions aside from force conduce to the production of profound shock; and chief among these conditions is enumerated the fact that

the patient has added often to the physical injury a nervous, or possibly more correctly speaking, a mental shock added to the physical, and this latter form of shock finds its highest form of expression in an accident where the injured, through the sense of *sight*, is conscious for some moments at least of the approaching danger, which might most appropriately be illustrated by the brakeman with the foot caught in the frog of the rail while making a flying switch, totally unable to extricate himself, the car detached from the engine and under good speed, rendering escape impossible; so that the mental condition adds most markedly to the fatality of the injury, because experience has proven that in injuries occurring at night, when the injured has not been able to fully comprehend by the use of all the senses that can be brought to bear, injuries of this character have been less fatal and accompanied by a far less serious state of shock. And I am convinced that a daylight accident adds greatly to the horrors as well as to the fatalities. However new this idea may seem to some, it is and has been recognized by many railway surgeons of extended experience for years, and so firmly am I convinced of this being a fact that I confidently expect the entire profession to recognize it just so soon as experience in railway work will admit of more extended conclusions, and I feel that even military surgery rarely represents such mental strain, for there is a hope with the soldier that another, not I, will suffer.

There is a question in connection with railway surgery that I feel that this section should discuss at this time, that the question may not only be settled, but that the members of this section may be relieved from the humiliating and untrue reflection often cast at them for a want of a proper understanding or a proper conscience of the subject by their professional associates. I blushing refer to the criticism often hurled at our members by those rash and unbalanced, if not unposted men, who accuse the railway surgeon of unfairness and a lack of equity in his dealings toward his patients—the companies injured. My experience has been that no railroad company with which I am at all familiar desires anything but the truth, and only fears deceit and falsehood, and of all other employes they fear deceit and falsehood most in the medical and legal departments, and feeling that they have in their employ a doctor whose character can be impeached, cannot soon enough discontinue his services.

The general manager's idiosyncrasies must of necessity pervade every department of the service, but the vast majority of general managers are certainly grand, quick and perceptive men, receiving advice from a well-balanced legal adviser, who rarely fails to separate the true professional man from the quack, whether in or out of the professional pale. That we cannot all think alike is as true as that we cannot all feel alike, and in these we find our safety, for intolerance is bred of force and strength, and unity is said to bring strength and force, not always tempered with equity and justice. That the doctor has been accused of in-

vading the claims department in isolated cases, I grant you, and that he is not a member of the claims committee I wish to impress you. That time, if it ever existed, is long since passed. Lord Chief Justice Coleridge said from the English bench only last February in a railway case, referring to the action of a railway surgeon who had been acting for his company in endeavoring to compromise a claim with the injured man to whom he had submitted various offers for settlement, viz.: "Anything more improper than what was done by the company's medical adviser, I mean making offers of various sums to the plaintiff, I never heard. I thought all great railroads had given up the practice of medical men huckstering with the parties injured as to the amount of damages;" and on this ground a new trial was refused after a verdict of \$4,250 had been awarded. I only copy this case to show how impractical it would be for a company, however much inclined, to use a doctor for such a purpose, even if the doctor could be found who would consent to such a service. And we know and see quite plainly only harm could come to all interested in such practices, and the astuteness of the solicitors for all railroad companies would most effectively stop such practices, even if it were possible to use any doctor for such a purpose. The mission of the railway surgeon can hardly be misunderstood. Clothed with skill he must be philanthropic. Without either, or with but one of the attributes he cannot be a success. His place in the service is as distinct and separate from all the rest as is the station agent's distinct from the general manager. He merges not into the legal or claims department or any other, and is asked by the company for the truth and the truth only.

Indeed one of the most accomplished railway surgeons I know said to me less than a month ago, that the mammoth system for whom he occasionally did local and general work had made it a point to let all know that they wanted only the facts in or out of court. I hope I may be pardoned for this digression at this time and I feel that I may be pardoned if not justified in alluding to this phase of the railway surgeon's duty. I know of no science in the execution of which should be accompanied with more philanthropy than the science of medicine, and I know of no branch of that science which calls for more philanthropy than railway surgery.

And in conclusion, I presume to say that we are all working, in whatever field, for the same ultimate end, viz. perfection, improving every avenue, elevating every part that the whole may be elevated, not seeking to weaken but to strengthen, and is it not the duty of every man to recognize him who can "best work" and "best do" in his own special sphere, however limited that sphere? And I feel that no specialist could consent to be barred from the grand central fountain of knowledge grading down to his own limited sphere which must to all appear insignificant as compared to the whole. So we hope and believe that the great growing science and art of medicine

and surgery can but be aided and strengthened by the specially adapted and qualified railway surgeon whose greatest and grandest field of labor lies in the direction of offering aid and relief both scientifically and philanthropically to that portion of humanity whose environment extends to the iron horse with all the catastrophies incident to so hazardous an industry, giving rise to special forms and conditions of injuries and requiring *special experience* in their care and attention that the best results may be obtained for all.

#### SUTURES, LIGATURES AND THEIR APPLICATION.\*

BY C. M. DANIELS, M. D.

In presenting this paper it is not my intention to trespass upon the domain of the medical or surgical historian and weary you by reviewing the past, but I will try and mention a few points that I have found to be practical in my experience in acute surgery with special reference to railroad work, some of which may apply to general surgery as well. I am well aware that to a large majority of the gentlemen present what I have to say will not be new and I kindly ask their indulgence. I will first refer to ligatures.

So far as materials are concerned, we have but two kinds in common use, silk and catgut, either of which, when properly prepared, may be safely buried in a wound. Pure silk only is to be considered and should be prepared by first boiling in a 1 to 500 sublimate solution, then transferred to and kept in 95 per cent alcohol until ready for use. Catgut to be placed in ether for twenty-four hours to extract the fat, then placed in 95 per cent alcohol or oil of juniper berries; twenty-four hours later it will be fully sterilized and can be kept for a long period of time.

The proper application of ligatures to open-mouthed blood vessels and especially in amputations, I believe, is even to-day not well understood or often neglected. I venture to make this statement for the reason that many cases of injury come under my care from points out upon several railway lines after having had operations performed and I have frequently satisfied my own mind that the cause of delayed recoveries and the inauguration of suppuration was directly the result of improper application of the ligatures.

I have several times found long silk ligatures protruding from an angle of the wound—a method once in favor but which should now be obsolete.

The errors usually made consist in including too much tissue under the knot—muscles, tendons, intermuscular septae, etc.—this also increasing the dangers of secondary hemorrhage, as the ligatures are much more likely to unite, slip off or give way when these tissues are included.

Also, the strangulation of said tissues make pus-producing material or become as foreign bodies to the wound. The tying in of a nerve is a greivous mistake, for, added to the other conditions mentioned, it is productive of great and unnecessary pain and I have seen several neuromata developed in stumps apparently from this cause alone and necessitating complete or partial re-amputation.

\* Read before the Association of Erie Railway Surgeons, at the Academy of Medicine, New York, Jan. 5, 1894.

To apply a ligature properly I believe we should take every care that nothing but the vessel be included. Go inside of the sheath and tie only the artery (or vein) proper, the elasticity of blood-vessels, outside of bone, making it always easy to apply gentle traction with the forceps, or better, a small tenacula, and quickly have them under the eye and separated from surrounding tissues. Then be sure and close them all. Nothing is more annoying than to reopen a wound and search for some neglected bleeding point. Necessary haste may be tendered as an excuse, but to re-anaesthetize for the purpose of stopping a hemorrhage, certainly increases danger, to say nothing of the value of even a small amount of blood saved to a nearly exsanguinated patient.

It was formerly considered unnecessary, yes, even reprehensible, to ligate veins, except possible in certain pathological conditions. That prejudice vanished with the advent of antiseptic surgery, and now bleeding from every source must be stopped.

To reduce the number of ligatures in a wound "torsion" answers well upon small vessels, but to do it with safety requires care. The vessel should be carefully drawn out from the tissue and haemostatic forceps applied high up and at a right angle to it, leaving at least one-fourth of an inch outside of the forceps, then this projecting part to be well but carefully twisted with another forceps. The lumen is then occluded by the forceps in addition to the twisted portion and greater safety is assured.

I have always felt a certain amount of timidity in using catgut and a single tie on large arteries, my custom now being, after the ligation is made, to pass the ligature around the vessel a second time and tie again on the opposite side.

It is a fact that the division of a muscle may produce spasmodic contraction sufficient to temporarily close up small vessels within it, which, if not discovered, and the wound be closed, may cause very troublesome bleeding, more particularly after reaction following shock, and I put forth this as a plea for delay in closing a wound until after the most careful inspection, especially in those cases where so much may depend upon the complete arrest of hemorrhage.

#### SUTURES.

The approved sutures of to-day are silk, catgut, silkworm gut and silver wire. But before concluding this paper I shall take the liberty of advocating another in addition, which I have used with great satisfaction.

The approximating of the skin over a wound, or the gentle support of the flaps after amputation, requires a suture that is light, strong, aseptic, not expensive, and easily prepared. The four mentioned have, by common consent, been adopted, and are severally used according to the necessities of individual cases. The preparation of the first two being identical as for their use for ligatures, while the silkworm gut requires only that it be kept in an antiseptic solution a few hours before using, either sublimate or alcohol. The silver wire may be sterilized at the operating table.

The application of sutures, I believe, should receive more than a passing notice, the results of which have much to do with our success, not only in securing early union, but in wounds of the face, where accurate adjustment of the integument is so necessary to avoid unsightly scars.

To get union by first intention, a careful approximation is imperative, and must never be done carelessly. In operative work all skin incisions should be made at a right angle with the surface—never "beveled"—and when the edges are placed together they should be sutured so that there can be no overlapping, as we all know that when the different skin layers are placed in apposition and kept there, prompt union results, provided the balance of the operation is done with equal care.

Referring again to personal custom, in major amputations I use silk or silkworm sutures, placed about three-fourths of an inch apart, introducing the needle in a direction backward from the line of incision and a little less than one-half inch from it, and through the flap, then crossing to the opposite one, bring it from below upward, emerging at the same angle as its entrance. This makes the free part of the suture longer on the under side and, when tied, prevents any "tilting up" of the skin edges. Between these silk sutures I place others of gut, finer silk or "horsehair" (the latter being the article I have intimated that I should mention), at intervals of about one-fourth of an inch and a little more than that from the incision, introducing them in the same manner as the others.

I have detailed this somewhat, for the reason that I have seen so many flaps having the edges of the skin standing bolt upright, no effort having been made toward having the edges in proper position.

And now I wish to speak upon the subject of "horsehair" sutures. Surgery being an art, as well as a science, the artistic part can be in no way better displayed than in the care of facial wounds.

It is said that the finest music is produced by drawing the tail of a horse across the bowels of a cat, and as catgut has now received a fair share of attention I propose to give the horse's tail a show.

For the past eight years I have used horsehair almost exclusively in facial and many other wounds and find its advantages many. I select long white hair and prepare it by carefully washing with soap and water, then place it in 1 to 1,000 sublimate solution for a day and from that to alcohol and it is ready for use. The hair is non-irritating and may be left *in situ* from six to ten days as required. A small eye needle may be used with it and many stitches can be inserted as may be necessary to adjust the parts.

In using white hair and where no cover dressing is required, very frequently wounds can hardly be seen and a thin layer of flexible collodion over all will keep out infection and aid in the fixation.

These sutures are very easily removed and never leave evidence of their use. They should be tied in a single knot, the "surgeon's" knot is unnecessary, the "granny" answering every purpose.

Our authorities are comparatively silent upon the subject of this suture, yet I claim no originality in presenting it at this time, but after years of experience it has my cordial recommendation.

Unsightly face scars are always dreaded and if you will close such wounds with horsehair your patients will "rise up and call you blessed."

#### DISCUSSION.

DR. HOBBS:—I would like to say a word regarding

one of the details referred to in Dr. Daniels' paper, namely, the application of the ligature. The books tell us that the knots of the ligatures become encysted and give rise to no further trouble. This is not always the case, and in a number of instances the knots left in the wound have proved a source of great annoyance to me, as well as to the patient. The following is a case in point: About a year and a half ago I performed an amputation at the knee-joint, and two or three months later the patient called my attention to the fact that there was something wrong with the wound, which was sore and tender. Upon examination I found a small abscess, which was opened and washed out and which proved very annoying for some weeks. I then decided to open the wound, which I did, and found a little ligature knot, which was the cause of all the trouble. This accident has occurred to me in a number of cases. I know no remedy for it.

**DR. CHAFFEE:**—I wish to endorse Dr. Daniels' remarks regarding the use of horsehair ligatures and a fine needle. It saves cutting the tissues and prevents the lodgment of germs.

**THE VICE-PRESIDENT:**—There is one point which I would like to bring out and that is, in regard to boiling the ligatures in sublimate solution. I believe that is unnecessary. Boil them in alcohol and you do not have to change them; you can leave them there.

**DR. H. P. HALL:**—I would like to ask Dr. Daniels if he has any difficulty in keeping these ligatures after they are prepared; if they are readily tied?

**DR. DANIELS:**—These horsehair ligatures are easily prepared in the form of the samples which I distributed. I have a young man in my office who prepares them for me, and if any of the other members care to have a sample I wish they would send me word and I shall be pleased to furnish them.

#### Tuberculosis Infection.

Ordinarily the air of rooms or of hospital wards occupied by consumptives is free from bacilli and may be breathed with impunity. It is only when the dust of the room, containing dried and pulverized sputa, is disturbed by sweeping, or shaking up the bed-clothing, or in other ways, that danger of infection occurs. Scrapings from the walls of rooms occupied by consumptives, inoculated into animals, produced tuberculosis in twenty per cent of the latter. Control experiments showed that dust from the walls of houses, hospital wards and public buildings not inhabited by tuberculous patients was not infective. Cornet showed also that the dust from the walls was in no case infectious when sputum cups were used to receive all expectorated matter, although such expectoration was full of bacilli. Praussnitz has demonstrated the presence of tubercle bacilli in the scrapings from the interior of railway carriages on one of the German railway lines carrying many consumptive passengers. Thus is experimentally demonstrated a danger to which attention had previously been forcibly drawn by Whitaker, Gihon and others.—Address by G. H. Rohe, M. D., before the Medical and Chirurgical faculty of Maryland.

## Notices and Reviews.

Dr. Elmer Lee, of Chicago, has reprinted in pamphlet form his two addresses, one on "Cholera, its prevention and treatment," made before a mass meeting of physicians called to consider the subject a year ago, and one, "The treatment of typhoid fever," made before a meeting of the Chicago Medical Society in March last. Dr. Lee had experience in the treatment of cholera both in Russia and at Hamburg during the epidemic of 1892, and his brief summary of the different theories and methods of treatment which found more or less favor is interesting. Among other things he says:

Of the experiments of Ferran, of Spain, and Haffkine, of the Pasteur Institute, much has been said, but what has been said has failed to bring conviction to my mind. As cholera itself cannot be said to protect one who has had the disease and recovered, against a second attack, then that which is less than cholera in influence cannot be expected to do it. The seat of the disease is located in the intestines, and, so long as the infectious juices are there, the lymph vessel, in the processes of physiological function, will continue to infect the blood. Can we hope to thwart physiological action of absorbents by hypodermatic injection of cholera culture, made at some time, it may be years, previous to the date of the passing epidemic? The answer by my judgment, is that such expectations are flimsy. The caprice of Stanhope at the Hamburg hospital cannot seriously pass for an argument in favor of anti-choleraic vaccination. His interesting but wildly exaggerated stories were the product of a newspaper's love for sensation.

Of typhoid fever Dr. Lee says:

The plan as proposed by me and practiced during a period of five years consists, in review, of the following systematic management in typhoid fever:

Water used internally as a douche for free irrigation of the bowels, either simple or made soapy with pure liquid soap. Water as a drink, and as a remedy taken copiously and frequently, especially during the stage of fever. Water is indispensable, and should be given as often as is desirable and agreeable to the circumstances of the case. Frequent application of cool water to the surface of the body during the entire illness.

Remedies: Peroxide of hydrogen (Marchand's), or glycozone, for the antiseptic effect of the oxygen which is set free in the stomach and intestines. But to be of real value, these remedies are to be taken in considerable quantity largely diluted with water, else, in my opinion, they are of little use. The capacity of the bowels is so great that a little of anything cannot spread over enough of this enormous area to effect it beneficially. Cleanliness is the principle governing the use of peroxide of hydrogen (medicinal) and glycozone.

For a remedy that soothes and brings on sleep at night, sulphate of codeine is better than chloral, besides it is the safest and best.

For food, anything that is simple and in liquid form; milk is always the best; milk and whipped eggs; pressed juice from broiled meat. The juice from fresh, ripe fruit. The nutrition taken should be at regular intervals (four hours), that sufficient time may be allowed for digestion.

Stimulants and drugs are injurious without exception, and better results are secured without their use. Typhoid fever, generally transmitted through the



drinking water, is a preventible disease. Typhoid fever affects all classes, but if food and water were always pure, no class or age need contract typhoid fever. Cleanliness everywhere and always is the means at hand which makes it possible to escape typhoid fever and other diseases of the bowels. Internal cleanliness as well as external is a reasonable proposition of hope for the cure of the unhappy multitude of sick and discouraged humanity.

The "Nurses' Dictionary of Medical Terms and Nursing Treatment" is a valuable little volume compiled by Honnor Morton and published by W. B. Saunders, 925 Walnut street, Philadelphia, Pa. Price, \$1.00, subject to the usual trade discount.

W. B. Saunders, medical publisher of Philadelphia, recognizes the importance of question compends which are largely coming into use from the new method of teaching medicine by the recitation plan rather than lectures, and has now in preparation a new series of manuals particularly for the use of students.

An article that will be read with general interest is one by Dr. William A. Hammond or "What should a doctor be paid?" published in the North American Review for June, 1894. Dr. Hammond concludes:

It is manifestly unjust that there should be a uniform rate of fees applicable to all medical men, regardless of the skill and experience of the practitioner. There are many inside the profession who would have a level grade for all, just as do the trades unions, which prohibit a competent bricklayer from laying more bricks in a day than can be laid by an inferior workman. But superior science and ability should count largely in the medical profession in the matter of fees, and to a certain degree they do, but to nothing like the extent that should prevail. They are the strongest kind of factors with lawyers, and they should be still more powerful with doctors. Boldness, originality, knowledge, tact, and above all, that peculiar power which enables the physician to comprehend almost at a glance the nature of the case with which he has to deal, should be high-priced to those who have the ability to pay. Finally, it must be borne in mind that no matter how much the medical man may receive in fees in the course of a year, the work that he does for nothing would, even if moderately paid for, reach a sum far in excess of the pecuniary remuneration from his well-to-do or wealthy patients. No class of men do so much in the way of charity as those who practice medicine. It is time that superior skill in them and wealth in their patients should count for more than has hitherto been the case, and their fees should be promptly paid. Gratitude is an evanescent emotion; and the medical account presented months after the service has been rendered is too often regarded like the bill for a dinner eaten long ago.

## Notes, News and Personals.

Dr. J. B. Murphy, of Chicago, member of the National Association of Railway Surgeons, has been appointed honorary president for America of the surgical section of the twelfth International Medical Congress, to be held in St. Petersburg. The other appointments in this section were v. Bergmann, of

Berlin, for Germany; Kocher, of Berne, for Switzerland; Sir William Stokes, of Dublin, for Ireland; Sir William MacCormac, of London, for England; MacEwen, of Glasgow, for Scotland, and Mikulicz, of Vienna, for Austria.

Dr. Alfred C. Godfrey, demonstrator of anatomy, John E. Creighton medical college at Omaha, late interne Presbyterian hospital, Chicago, and more recently district surgeon C. & N. W. R. R. at Galena, Ill., and a member of the National Association of Railway Surgeons, has been appointed one of the surgeons of the Presbyterian Hospital, Omaha, Neb.

Dr. Wm. Sylvester, father of John E. Sylvester, of McArthur, Ohio, died at his home at Wellston, Ohio, on the 11th of May from apoplexy.

Dr. J. R. Brigge, editor of the Texas Health Journal, Dallas, Tex., sailed on May 16 for Europe, where he will spend two or three months in the study of the diseases of the eye at London, Paris, Edinburgh and other continental cities.

The New Hampshire Medical Society will hold its 103d anniversary meeting on Monday and Tuesday, June 18 and 19, at the G. A. R. hall, Concord, N. H., under the secretaryship of Dr. G. P. Conn, who is well known to the members of the association.

## Trade Notes.

DEAR DOCTOR:—While the odors of the jasmine, oleander and magnolia still linger and the recollections of the surf, the bay and the oyster bake are fresh and the Garten Verein and strawberries and "Dixie" are not forgotten, we wish to remind you of next year's meeting to be held here and suggest a plan that will save you trouble, annoyance and expense while in Chicago.

The above is the first sentence of a circular which has been sent to all members of the National Association of Railway Surgeons by the Metric Granule Co. of Chicago, which all members probably received and which suggests fascinating plans for reducing expenses and increasing pleasure at the next convention.

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Four hundred and five association buttons were sold at the Galveston meeting. Those who have not yet secured the association button can do so by addressing W. H. Haskell, 618 Pine street, St. Louis, Mo., inclosing with their order \$1.50.

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DENVER, COLO., April 11, 1894.

DIOS CHEMICAL CO., St. Louis:—I have been using "Sennine" for the last month in all my surgical cases and have had such excellent results with it that I feel like adding my word of approval to those which you have already received.

I have used it in a large variety of cases, some of them have been of such a nature as to have put it to a very severe test, and in all of them it has given the very best of results. I have given almost all of the new antiseptics a trial but have never found any of them to be as serviceable as "Sennine." I have also found it a very valuable remedy in gonorrhoea.

C. B. LYMAN, M. D., Surg., U. P. System.