

Anales del Cuarto
Congreso Médico
Pan-Americano

TOMO SEGUNDO

PANAMA
Chevallier, Andrade & Compañía, 466
1908



GENERAL MANUEL QUINTERO V.
Secretario de Fomento y Obras Públicas.

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1906

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fourth Pan-american Medical Congress.***

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PROPOSICIONES

ACEPTADAS EN LAS DISTINTAS SESIONES DEL CONGRESO.

Proposición del Doctor. Charles Chassaingnac.

"Owing to the suffering and to the serious danger to health and life for which the mosquito is known to be chiefly, if not solely, responsible, it is the imperative duty of all communities and governments to use all the means in their power for the destruction and gradual annihilation of the pestiferous insect in question".

Proposiciones de los señores Doctores Luis Toledo Herrarte y José Azucila, Delegados de la República de Guatemala.

1º Presentación en el próximo Congreso Médico Pan-Americano de la Farmacopea Internacional Americana.

2º Presentación del Código Internacional de Sanidad.

3º Presentación del Código Internacional de Temperancia.

4º Como consecuencia de la anterior, recomendación del establecimiento de casas de Temperancia.

5º Creación en el programa del próximo Congreso de una Sección de Enfermedades de los Países Cálidos.

6º Recomendación de crear la Cruz Roja Americana en el orden civil y en el orden militar.

7º Recomendar eficazmente la erección de cátedras de Medicina legal en los estudios oficiales de Jurisprudencia.

8º Recomendar que se proteja ampliamente la lucha anti-tuberculosa.

Proposición del Doctor Hugo Biffi, Delegado de la República del Perú:

1º "La conveniencia de recomendar que en los países Americanos, sobre todo en los de la costa del Pacífico, se hagan obras de saneamiento en los puertos y se funden, en los principales de ellos, estaciones sanitarias completas, organizadas de un modo especial para combatir la peste bubónica y la fiebre amarilla.

2º De la misma manera recomendar desde luego, por lo que toca á la defensa contra estas enfermedades, la adopción de reglas y criterios uniformes, para que las medidas sanitarias oportunas no causen graves perjuicios á los intereses comerciales.

3º La oportunidad de que se establezca un servicio de información recíproca y directa entre las direcciones técnicas sanitarias de los países interesados."

Segunda proposición de los señores Delegados de la República de Guatemala:

“Los Delegados del Gobierno de la República de Guatemala, tienen la alta honra de invitar á los señores Congresistas para que, si lo tienen á bién, sean muy servidos de señalar á Guatemala, Capital de la República, como centro de reunión del próximo Congreso Médico Pan-Americano. El pueblo y Gobierno de Guatemala sentirán legítimo orgullo de esa designación; y de poder albergar, dándoles la más hidalga hospitalidad, á los miembros distinguidos que del Continente concurran al Quinto Congreso Médico Pan-Americano.”

THE PHARMACOPEIA

AND ITS RELATIONS TO DRUG THERAPEUTICS

BY F. E. STEWART, PH. G. M. D. EAST ORANGE, N. J.

Among the many obligations accepted by the physician when he receives his license from the State is the obligation to render to the State certain professional services in regard to the *Materia Medica*.

In exchange for the license to practice the art of drug therapeutics the State has a right to demand that the origin, nature, composition and methods of manufacturing (or preparing) compounding and dispensing medicines, be published, reduced to law, embodied in system and protected from pretense and error by a changeless nomenclature; that practicable standards be established for the identity, character, quality and strength, of every *materia medica* product, and that the various methods for preparing drugs for therapeutic use be compared, and those which, all things duly considered, produce the best results, be generally adopted. The State has a right to

demand this for two reasons; first because progress in materia medica science is impossible unless these demands are complied with; second, because there can be no rational drug therapeutics without it. This is made still more apparent when it is considered that the only way to truly ascertain the therapeutic value of a new therapeutic product is to prove its virtues by physiologic and clinical tests as carried on under the control of competent observers; that these tests must be conducted under varying conditions, as pertaining to the drug, to the preparation of the drug, and to the condition and environment of the persons and animals upon whom the tests are made in sickness and in health; also that the knowledge thus involved must be taught to the profession, and to those entering the profession, by means of the professional press, including text-books and periodicals.

Now the very basis upon which all this knowledge rests is the pharmacopeia. In it is supposed to be contained a very, comprehensive list of the drugs, vegetable, mineral and animal, used by the medical profession in treating the sick, with tests for determining their identity and purity, and directions for preparing them in a proper manner.

It is evident, therefore, that the pharmacopeia is also the foundation of all rational drug therapeutics. Take away the foundation and the superstructure falls to the ground.

No argument, or statistics are necessary to prove that many of the medicines prescribed are not contained in the pharmacopeia, for that fact is too well known to admit of controversy.

What is the result? The result is that a large part of the knowledge of the so called newer materia medica has never been properly classified. It cannot be reduced to law and embodied in system and protected by nomenclature,

until full knowledge is published. Therefore, so far as these products and preparations are concerned it becomes the duty of the medical profession to secure this publication and classification:

For many years past those of us interested in materia medica science, and in the practice of the useful arts of pharmacy, *pharmacognosis*, pharmacodynamics, and drug therapeutics, have endeavored to secure national legislation for the establishment and enforcement of standards for materia medica products and preparations. Under the various names of Brosius Bill, Hepburn Bill, Mc Cumber Bill, etc we have had this matter repeatedly before Congress, but have been repeatedly defeated.

The Mc Cumber bill, recently defeated, provides that the chief of the Bureau of Chemistry in the Department of Agriculture shall make or cause to be made, under rules and regulations to be prescribed by the Secretary of Agriculture, examination of specimens of foods and drugs offered for sale in original unbroken packages in the District of Columbia, in any Territory, or any State other than that in which they shall have been respectively manufactured or produced, or from any foreign country, or intended for shipment to any foreign country, which may be collected from time to time in various parts of the country. If it shall appear from any such examination that any of the provisions of this Act have been violated, the Secretary of Agriculture shall at once certify the facts to the proper United States Districts Attorney with a copy of the results of the analyses, duly authenticated by the analyst under oath, and it shall be the duty of every district attorney to whom the Secretary of Agriculture shall report any violation of this Act to cause proceedings to be commenced and prosecuted without delay for the fines and penalty in such cases provided." The term "drug" in this Act includes all medicines and

preparations recognized in the United States Pharmacopeia for internal and external use; also any substance intended to be used for the cure, mitigation, or prevention of disease."

"A drug shall be deemed to be adulterated, if, when sold under or by a name recognized in the United States Pharmacopeia, it differs from the standard of strength, quality or purity as determined by the test laid down in the United States Pharmacopeia official at the time of the investigation: provided, that no drug shall be deemed to be adulterated under this provision if the standard of strength, quality or purity be plainly stated upon the bottle, box, or other container thereof, although such standard may differ from that determined by the test laid down in the United States Pharmacopeia. It shall also be deemed adulterated if its strength or purity fall below the professed standard under which it is sold."

"Such drug shall be deemed to be misbranded if it be an imitation of, or offered for sale under the name of another article; or if the package containing it or its label shall bear any statement regarding the ingredients or the substances contained therein which statement shall be false or misleading in any particular, or if the same be falsely branded as to the State or Territory in which it is manufactured or produced."

The bill also provides, that any manufacturer, producer, or dealer who refuses to comply upon demand, with the requirements of this Act shall be guilty of a misdemeanor and upon conviction shall be fined not exceeding one hundred dollars or imprisonment not exceeding one hundred days, or both."

The advantages of the bill to drug therapeutics are apparent. Its passage would be a step in the right direction, and, the enforcement of its provisions another

step. But the bill does not include all that should be done in this connection. It is the duty of the profession to reduce all of the unofficial materia medica products and preparations on the market used by the medical profession in treating the sick to common standards so that there shall be uniformity in therapeutic effect. And the common standards, together with the names and description of the articles, and methods of preparation, should find place in the pharmacopeia. This also should be included in such legislation.

The great obstacle to any such legislation in behalf of the pharmacopeia is the powerful opposition of the commercial interests involved. This opposition was made very apparent in connection with a plan I suggested with similar intent. In 1881 I devised and organized the first scientific department connected with the large manufacturing houses. This department proved a great success, and as one of the results other large manufacturers have followed the example. At the same time I also suggested the founding of a national bureau of materia medica under the auspices of the Government at Washington with which the medical and pharmaceutical professions, including the manufacturers, might cooperate. This suggestion has met the strongest opposition on the part of the commercial interests concerned from the very beginning. Although endorsed by the Smithsonian Institution, and the medical departments of the Army, Navy and Marine Hospital Service, and aided by a Memorial to Congress on the subject by the American Medical Association, commercial interests defeated the plan. I brought the subject before the American Therapeutic Society while occupying the chair during the organization of that body, and again in a paper read before the society at its second annual meeting, but the commercial interest sent their representatives to the meeting and defeated the plan. It was then taken

up by prominent members of the American Medical and American Pharmaceutical Associations, who appointed a joint Committee for elaborating and perfecting it. Again the commercial interests defeated the plan, and the two association rejected it.

Now what is the reason why the commercial interests engaged in the business of supplying materia medica products and preparations are so strongly opposed to any plan to control the character; quality and strength of this output? These interests frankly gave the reason. It is because such a plan, if carried into effect, would "levelize" the output of these houses to the level of the pharmacopeia, and, by forcing all manufacturers to adopt and maintain common standards, take away the commercial advantages of competition as now understood by which one house is enabled to advertise its output as superior to the output of others.

This clearly shows that the practice of pharmacy, including the entire business of manufacturing and dealing in drugs, should be organized on a professional, not commercial basis, and conducted as a branch of medical practice under the joint control of the medical and pharmaceutical professions. The art of pharmacy should be subsidiary to the art of drug therapeutics. Medicines should not be advertised and sold promiscuously. Their use should be limited to the demands of a rational drug therapeutics as practiced by educated physician. This would include a line of open formula domestic medicines to be used by the people for emergencies. But this class of preparations should also have a place in the pharmacopeia, and be used in a rational manner by the public under the tuition of the medical profession.

I have frequently suggested these solutions of the problem in papers read before the national medical and

pharmaceutical societies, and have been met with the charge of being visionary and utopian, and utterly impractical. But I am to be found in good company in this my utopian dreaming. Hear what the Supreme Court of the United States said on the subject in the decision handed down in the Syrup of Figs case (No 36, Oct, term, 1902): "Some courts have gone so far as to hold that courts of equity will not interfere by injunction in controversies between rival manufacturers and dealers in so called quack medicines. It may be said in support of such a view, that most, if not all, the States of this Union have enactments forbidding and making penal the practice of medicine by persons who have not gone through a course of appropriate study and obtained a license to practice from a Board of Examiners; and there is similar legislation in respect to pharmacists. And it would seem to be inconsistent and to tend to defeat such salutary laws, if medical preparations often and usually containing powerful and poisonous drugs, are permitted to be widely advertised and sold to all who are willing to purchase them. Law might properly be passed limiting and controlling such traffic by restraining retail dealers from selling such medical preparations except when prescribed by regular medical practitioners."

Taking all of these facts into consideration, therefore; it is evident that there can be no satisfactory system of drug therapeutics which does not include the progress of the pharmacopeia and the maintenance of its standards; that these standards cannot be established and maintained without "levelizing the materia medica products and preparations on the market to common standards; that such leveling, being entirely opposed to commercial interests, requires this reorganizing of the entire drug business, and the change of its character from a commercial to a professional character, and that, owing to the obligations imposed upon the medical profession

by the State it is the duty of the medical profession to take this matter up, and, aided by the public, pass and enforce laws to attain this end.

The EARLY TREATMENT OF CLUB FEET.

GWILYN G. DAVIS.—PHILADELPHIA, U. S. A.

It has recently been urged by some orthopedic surgeons that congenital club feet be not treated in infancy but to wait until the child is a few years old. The reason advanced is that relapses are so frequent that it is necessary to do the work all over again.

It is our firm belief that, on the contrary, treatment should be instituted as soon as the deformity is noticed, within a month after birth or even sooner.

One must however be guided by the general condition of the patient. If the child is a strong, healthy one then the treatment cannot be commenced too early; if, however, the child is weak and sickly, treatment should be deferred. Many infants, for some time after birth, have a hard struggle for existence, and there is nothing to be gained by curing the club feet of a child who dies before it is time for it to walk. The treatment necessary for the

cure of club foot is a more or less painful and irritating one and should not be imposed on a child unable to bear it.

Most of the children so deformed are however usually so strong and healthy that the treatment necessary does not in the slightest degree impair their general condition.

A positive objection to waiting until the child has learned to walk, before attempting correction, is that the subsequent result is not so good as if otherwise would have been. A deformity which has been allowed to exist a few years becomes fixed, and the bones are distorted, and the ligaments and muscles shortened, and often to such an extent that the foot never regains its normal shape. It does not develop and grow correctly and is still a deformed foot ever after, even though the patient walks with the heel down and the sole flat on the ground. Therefore the best results are of necessity obtained by early treatment.

The question suggests itself why has the early treatment of club feet been in some cases, unsatisfactory? To this we would answer because suitable treatment has not been employed.

This may have been due either to a faulty method of treatment employed by the surgeon or to lack of cooperation, in carrying out the treatment, by those who care for the child.

While lack of ability or interest on the part of mother and nurse does sometimes render useless the best efforts of the surgeon, still, in my experience, it has been rare. Usually the mother is both willing and able to carry out her part of the treatment, most of them indeed are extremely anxious to do every thing possible to hasten a cure and soon acquire considerable skill in the necessary procedures.

The treatment we would advise is stretching and the use of bandages splints and shoes.

Stretching. This should be done both by the surgeon and by the mother or nurse. The surgeon shows the mother how it should be done and whenever the child is washed or at least once and better twice a day, the mother brings the foot as near as possible in a straight and normal position. The surgeon can see the child once a week and, with his hands, thoroughly stretch the contracted foot.

Bandages and splints. When the child arrives at the age of two or three months, after the foot has been stretched it is to be held as near as possible in a corrected position and bandaged, with a flannel bandage, from the toes up to the knee. In some cases this bandage alone will hold the foot nearly or quite straight. The bandaged foot and leg is then laid in a plain posterior, padded tin splint and bandaged firmly in.

This bandage and splint are removed once or twice a day, the parts bathed with alcohol and alum, and the foot thoroughly stretched and rebandaged and put back into the splint.

After a few months of this treatment the foot is readily brought so straight as to justify one in using a small shoe and side irons. This is more convenient and easier to apply than is the bandage and splint. It is to be worn night as well as day and the stretchings are to be continued by the surgeon as well as by the mother.

If this treatment has been efficiently pursued the feet will be capable of readily being brought straight and held straight by the time the child is ready to attempt to walk sometime between the first and second year.

After the child has commenced walking if, as is often the case, there is still a tendency for the deformity

to recur the surgeon must stretch the foot, until it can readily be placed in the shoe with the sole flat and the heel down. In obstinate cases this stretching may be done under an anesthetic and over a Koenigs block or even if necessary by the use of one of the many club foot wrenches or stretchers.

The cause of lack of success is most often the failure of the surgeon to stretch the foot sufficiently.

It should be brought not only to a normal position but be over corrected so as to assume that of a slight valgus. If this is done the mother will have no difficulty in placing the foot properly in the shoe, the shoe will hold the foot correctly and the turning of the toes inward will disappear. Courage is to be the surgeons watchword in the treatment of obstinate cases.

This line of treatment in my experience has been so satisfactory that I feel it is a great loss to the child if it is not carried out.

The cure of Inguinal Hernia

BY H. O. MARCY A.M. M.D. L.L.D. OF BOSTON, U.S.A.

The safe and permanent cure of inguinal hernia is one of the most brilliant triumphs of modern aseptic surgery.

No chapter in the history of our art is of greater interest, and the discussion on hernia and its possible means of cure has occupied a prominent place in surgical writings since the days of the Greeks and the Romans.

The many different methods devised for operative procedures are both instructive, and ingenious.

It is in evidence that the anatomists, even at the early periods, had demonstrated the obliquity of the inguinal canal in its normal development, but very naturally the changes which took place destroying this valve-like pressure, for the retention of the abdominal viscera, did not enter into an important surgical consideration: since any operation which involved the opening of the abdominal

cavity was considered absolutely unjustified, until a very recent period.

Perhaps the nearest approach to an intelligent effort to restore the obliquity of the canal, as a means of cure, was the operation of the late Mr. John Wood, of London B. 1825, D. 1891, who very ingeniously united the deep structures beneath the cord, by a double figure of eight silver wire suture.

This wire was introduced through the canal, upon the finger for the purpose of coapting the strong structures beneath the cord, and was not in any sense a cutting operation. Suppuration for the most part followed in a limited degree which showed that a wound thus made proved to be very generally an infected one. Dr. Wood was most industrious in the introduction of this method, reporting a long series of operations with many cures. Indeed this operation became, perhaps, the standard for the decade preceeding the introduction of antiseptic surgery.

The operation was difficult and few attained the skill, or obtained results comparable to those of Mr. Wood.

Such was the domination of, so called, classic authority that it does not appear to have occurred to any when operating for the relief, even of strangulated hernia, where necessarily a large open wound had been made, that a reconstruction of the tissues could be effected for the purpose of cure.

Mr. Lister's first and perhaps most effective demonstration of the value of antiseptic surgery was the opening of the larger joint cavities with a safety hitherto undreamed. This method was early applied to abdominal surgery, but in the earlier period drainage was insisted upon as a *sine qua non*, which necessitated the uttermost care in the application of frequent changing of antiseptic absorbent dressings.

The proper reconstruction of the deep structures is rendered possible only by the use of buried sutures.

One of the most prominent of the early American surgeons, Jamieson of Baltimore (*) is deserving of recognition for the value of his contributions, far beyond that which is usually accredited to him. He introduced the buried animal ligature for the occlusion of arteries, and published a history of his research work upon the changes which ensued when applied to the arteries of animals compares favorably with the better work of the more recent periods. It then met with such favor that he was awarded a prize for his essay in 1827, and for many years arteries were ligated, and the ligatures cut short, in the better surgical practice in America, and in England. Connective tissue structures in considerable variety were used, including the tendons of animals, but preference was generally given to sutures from indian tanned deer-skin.

All this however was ultimately lost and forgotten; since all wounds were commonly infected, and the heated discussions over the so-called inflammatory processes pertaining necessarily to such wounds, occupied the attention and filled the pages of most writers for a generation.

Ignorant of this splendid work, dominated by a new thought inculcated by Pasteur, Lister began his monumental labors resulting in a fundamental revolution in all surgical proceedings involving the infraction of the tissues. He traversed the work of Jamieson, although obliged by the restrictive laws of England to go to France for this purpose.

Notwithstanding all this, it does not appear to have occurred to Mr. Lister that the most marked distinctive fruitage of his demonstration lies in the aseptic coaptation

(*) Dr. H. J. Gamieson Prof. of Surgery in Washington Medical College, Baltimore.

of healthy structures applied to a great variety of wounds: since when I was his pupil in 1870, and for a considerable period after, he used through and through removable sutures and drainage tubes.

For years his inventive genius was most earnestly directed toward the devising in considerable variety of antiseptic dressings which should protect the wound from infection, subsequent to operation. Mr. Lister also gave us aseptic catgut ligatures, and sutures, so prepared as to be reliable, and trustworthy.

In 1870 I first operated, for Dr. A. P. Clark of Cambridge, upon a very pronounced strangulated hernia with a large opening where, owing to a bad asthmatic, bronchitis, in the emergency I entirely closed the wound without drainage, using buried catgut sutures. Primary union and complete cure followed. The lesson was not lost, and was speedily multiplied by others and the experience published during the latter part of the same year. Little by little the use of buried animal sutures was applied to wounds in great variety, the results of which were from time to time published.

The inherent defects of catgut caused me to institute a systematic search for better material. The ultimate fruitage of this, resulted in the discovery and utilization of tendons from the tail of the kangaroo. In the squirrel, the rat, and the opossum, and probably the whole Marsupial family the psoas muscle is composed of multiple fasciculi each having a tendon extending to the extremity of the tail.

The tendons from the small kangaroo furnish by far the best suture material yet found.

The forgoing introductory chapter seems necessary in order to make clear the factors essential for the cure of oblique inguinal hernia.

In the ultimate analysis of oblique inguinal hernia, these are as follows: the wound must be sufficiently large

for a proper demonstration of the varying conditions which may be found.

Usually in hernia of considerable size the peritoneal envelope,—the sack,—is freely dissected from its environment. It is usually to be opened and its contents returned to the peritoneal cavity.

In large old retained hernia it is frequently necessary to remove more or less considerable masses of adherent, deformed omentum. In this instance the stump must be very carefully sutured to prevent hemorrhage and subsequent adhesions of its fresh surfaces.

The sack is dissected quite to the base within the internal ring: evenly closed with a double continuous suture when under moderate tension.

The sack is then cut away, and the resilience of the peritoneum causes it to retract, leaving a smooth intra-abdominal peritoneal surface.

The cord is held by an assistant to one side, slightly on tension, in the upper angle of the wound.

The deep strong structures are evenly coapted by means of double continuous tendon sutures, introduced by a needle with eye near the point which serves as a shuttle for the carrying of the suture. This is exactly the stitch used by the shoemaker. The only care being not to constrict the enclosed tissues too tightly. The parts should be held in coaptation with the least possible devitalization: on this account the blood supply of the enclosed tissues is to be preserved as fully as possible. The structures included in this line of sutures, which go to make up the posterior wall of the canal, are the inner border of Poupart's ligament, and the conjoined tendon interfolded with the relaxed tendon of the transversalis muscle. Not seldom certain muscular fibres are found beneath the cord.

In this way the posterior wall of the inguinal canal is greatly increased in length.

The internal ring is closely closed upon the cord

The cord is now replaced in the new reconstructed canal, which is completed by closing over it the divided fibres of the external oblique.

A buried subcuticular fine tendon suture closes the external wound.

This is dried and sealed with iodoform collodion, reinforced with a few fibres of cotton.

This germ-proof dressing remains firmly adherent until loosened by the proliferating epidermal cells, usually a week or ten days.

There is generally some oedema of the scrotal tissues, but this subsides in a few days, and is unimportant. Three or four weeks should elapse before a strain is brought to bear upon the parts and the patient should be cautioned to exercise a little care for a considerable period, but no truss is applied.

In the accomplishment of this plan of cure as outlined, many operators have sought to modify unimportant essentials, and very naturally these surgeons have emphasized the exceptional value of their contributions to the subject.

I have described what I consider essential.

There is certainly very little disagreement at present as regards the hernial sack, and its contents. The narrowing of the internal ring from below upwards, in order to minimize as much as possible, the opening into the abdominal cavity, and increasing the length of the inguinal canal admits of no discussion.

The structures which should enter into the composi-

tion of the posterior wall of the canal and the method of their coaptation has been subject to a great variety of modifications.

One, would put all the strong structures beneath the cord; one, would make a new internal ring at another point of the abdominal canal: under certain conditions, one would utilize the pyramidalis muscle, transposing it to reinforce the weakened structures: one, would broadly imbricate the tendonous parts, hoping thereby to strengthen the structures. For these various purposes, one would use silk sutures, another catgut instead of tendon: one, advocates the use of this needle, another that until instruction is lost in weary some detail although this debatable ground is reduced to such narrow proportions. These kaleiscopic variations usually denominated by the name of its advocate, are presented in variety sufficient to fill a small volume.

I do not question that all these operators obtain good results, since these minor factors may be very important. The major ones must necessarily remain. These are the aseptic reconstruction of the inguinal canal so as to deflect the intra abdominal pressure to nearly a right angle with its long axis: the cord and its vessels restored to their normal nutrition and function. The one essential dominating factor is the buried suture, and this aseptic and absorbable. Its use pertains alike to the reconstruction of all well vitilized aseptic tissues, playing an ever increasing role in the technic of modern surgery, to which it is one of the most important of contributions.

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ALMuerzo dado á los señores Congresistas en la casa de "Versailles" en las Sabanas de Panamá.

Some Observations Respecting the Treatment of Face Presentations.

THE SYNOPSIS OF A PAPER READ IN THE FOURTH MEETING OF THE PAN-AMERICAN MEDICAL CONGRESS PANAMA, JANUARY, 2—6 1905, by AGUSTUS P. CLARKE, A.M., M.D. CAMBRIDGE MASS.

Typical cases of face presentations do not appear to be very common ; the older statistics give the proportion of one in every three hundred. The author has met with such cases in his practice, once on the average in a hundred and fifty. Face presentations sometimes take place in consequence of a disproportion in the development between the posterior and anterior muscular structures of the foetal neck and thorax. Other causes are abnormal narrowness of the maternal pelvis, especially at the brim or superior strait, dolicho-cephalic head of the child and excess of liquor amnii are contributing causes. Early diagnosis should if possible always be made. The necessity of acquiring proficiency in making external ex-

aminations is insisted upon. Such examinations are demanded before rupture of the membranes. Schaltz's method by external manipulation with the hand has its advantage as an initial proceeding. Internal manipulation with pressure against the chin, brow, or vertex may sometimes aid delivery, as in mento-anterior cases. In mento-posterior presentations before impaction has occurred, rotation of the chin toward the symphysis pubis should be made. The child being alive and the case being of the mento-anterior variety and if impaction has begun to take place and the maternal pelvis is not too narrow, forceps may be used, otherwise external manipulation and version should be resorted to, especially if the funis is prolapsed.

When called in the later stages of a case of mento-posterior presentation, and the position of the face cannot be conveniently changed by manipulation, and yet the child is still alive, symphysiotomy offers the best method procedure for saving both the mother and the child. Craniotomy should be attempted only when the child is dead

TREATMENT OF THE UPPER AIR PASSAGES.

BY WALTER A. WELLS, M.D. WASHINGTON, D.C.

Whether or not we side for or against those who claim that tubercular disease may primarily affect the upper air passages, we are bound to at least admit that very often we can find undoubted and well advanced lesions in the nose and the larynx, when the most careful physical examination of the lungs fails to reveal the remotest indication of the disease in these organs; there will be no cough and no expectoration to infect the upper organs in the passage over them, no night sweats and no emaciation; the nature of the process in the nose and throat is probably not suspected and diagnosis is made only after microscopical study of the tissue and finding of the tubercle bacillus.

Scores of this description have been observed by the author over periods varying from one to six years when finally as a rule pulmonary tuberculosis which closes the history of the case.

It is contended by those who oppose the primary localization of tuberculosis in the upper air passages, that the failure to discover evidence of pulmonary involvement cannot be taken as conclusive of the non-existence; that the disease is in the lung, though in obedience, and presenting no symptoms from which a diagnosis is possible. With only this mere argument against primary localization in the upper air passages, while in favor of it we have the testimony of so many competent observers, our treatment, it seems to me, should proceed upon the theory that all cases are primary in which we are unable to demonstrate concomitant disease in the lungs.

Acting in accordance with this theory, it should be our business to as thoroughly as possible eradicate the diseased process as soon as we have discovered it for fear of further extension, even though there may be some already existing disease in the lungs, as it is very slight and not progressive, we shall still have done right in removing from the upper air passages a mass of diseased tissue which at least would have spread and infected neighboring parts, if it had not constituted the source of a general tuberculosis.

The question therefore, is not the presence or absence of an accompanying pulmonary disease, but rather the degree of its progress, for if the pulmonary tuberculosis is in a very advanced stage, so that the lesion above will become continually infected from the secretion ejected from the lungs, or if the patient must at any rate die of the pulmonary trouble, harsh or surgical measures ought certainly not to be undertaken unless for some special symptom which needs urgent attention.

Tuberculosis of the nose occurs, according to Chiari, more frequently in children than adults, and in women than men. It appears in the form of humor, infiltration or ulcer and is almost always located upon the anterior

portion of the septum, from whence it may spread to the floor of the nose or inferior turbinated body.

Melzi in a recent article (*Archives Internat. de Larynx, Otat eh de rhinol*, July & August 1904) has collected from the literature reports of 90 cases (26 ulcerations 62 granuloma, 2 caries of bone) of which 19 were said to be primary. Fourteen of these were said in the form of neoplasm, 5 of ulceration.

Tuberculosis of naso-pharynx and oro-pharynx is very exceptionally found unless in the late stages of pulmonary tuberculosis. Its connection with a laryngeal tuberculosis from which it has extended can sometimes be distinctly made out, when it will be seen to be located along the lateral pharyngeal wall and the posterior pitton of the palate.

Tuberculosis of the lymphoid structure of the throat (naso-pharyngeal, oral and lingual tonsils) is perhaps much more frequent than usually supposed, because the researches of those who have made microscopical examinations here, has developed that a tubercular condition is quite often present in the tonsils in cases in which the disease would not have been suspected from mere inspection.

The importance of this observation from a therapeutic standpoint is all the greater because certain authors (Woodhest, Sathom, and Aufrecht) teach that this is the chief way by which the tubercle bacillus gains entrance into the system.

All cases in which the tonsils appear diseased and in which at the same time there is enlargement of the cervical lymphatic glands, should be regarded with suspicion and if it happen in children with hereditary tendencies the suspicion rises to the degree of a strong probability.

That part of the upper respiratory tract which is by far the most frequently affected with tuberculosis, and with which we are more particularly concerned therapeutically because of the distressing symptoms which result, is the larynx.

In the latter stages of advanced tuberculosis of the lungs the larynx is comparatively often involved, and treatment of some kind urgently demanded to relieve the acute pain which the patient suffers in swallowing and speaking and sometimes it is also necessary to undertake surgical measures to relieve the dyspnea due to stenosis. That something should be done under these circumstances, all agree, but whether it is necessary or profitable to institute treatment of any kind in the absence of these indications, and if so whether or not surgical measures are justifiable, are questions regarding which there is a wide diversity of opinion and practice.

With regard to tubercular disease located in any part of the upper respiratory tract outside of the larynx, we have not the same questions to consider and we have only to be guided by general principles: taking advantage of any drug which may be found particularly efficacious in treating the tubercular process where found.

In the nose if the process is limited to the septum the disease area should be thoroughly curetted, under cocaine and adrenalin, and lactic acid subsequently rubbed into the wound. If one of the turbinate is affected our procedure will be governed by the nature and extent of the lesion. If there be only a superficial ulcer present, frequent washing with alkaline and antiseptic solutions, and insufflation of a mixture of boric acid and iodoform will constitute the extent of our local treatment, if however, there be considerable infiltration the turbinate should be removed.

Ulcerations in the larynx of a tubercular character being very accessible should receive very diligent local treatment. The base and edges of the ulcer should be cauterized with lactic acid and at intervals between the use of the caustic methylin blue should be applied in the form of a powder or solution. This is one of the best agents we possess to promote the healing of the tubercular ulcer, but caution must be exercised to prevent toxic effects, which are generally manifested by abdominal pains and strangury.

In case of tuberculosis of the tonsillar structure, time should not be lost in spraying and dusting the parts, but the diseased organs must be removed as soon as the nature of the disease is known.

The indications to be met in treating the tubercular larynx are to relieve the distressing symptoms, and to eradicate the disease.

The symptom of which the patient complains most is the pain, present to some extent in using the voice but particularly distressing when he attempts to swallow. The dysphagia is sometimes so intense that the patient prefers to starve rather than suffer the pain.

Temporary relief may be obtained by directing a one or two per cent solution of cocaine into the larynx just before eating. Iodoform, which has been recently vaunted as of great value for this symptom has proved disappointing in the hands of most of us. Menthol and carbolic acid are still our most useful anesthetics and to be preferred above all others in pain of laryngeal tuberculosis.

A great many different agents have been recommended from time to time which have been supposed to have some special virtue when used locally to combat the tubercular process. We cannot in the limits of this short article ever name all of them much less discuss their res-

pective advantages. Of all, that one which has gained the strongest hold on the profession is lactic acid, recommended some twenty years ago by Krause. It is used in strengths varying from 20 to 50 per cent and under thorough cocaine anesthesia.

It is strongly escharotic and is sometimes followed by considerable reaction. It should never be used except in cases of a circumscribed ulceration and then only in the hands of one who is skilled enough to limit its use to the ulcerated area only. Of other agents which have been recently recommended as substitutes for lactic acid are sulphuric acid of phenol (Rovout) 10% solution of carbol-glycerine, or of lacto-carbol glycerine, (Batey) and ortho-parachlor-phenol.

Surgical measures in the treatment of laryngeal tuberculosis first came into great favor through the writings of Heryng and Krause, who operated extensively in these cases and devised especially instruments for the purpose. At the present time it can be said that the curette and the cutting forceps are much less frequently employed in the tubercular larynx than was the case a few years ago, and the indications for their use have greatly narrowed. In certain cases in which the tubercular process in the larynx is circumscribed and the pulmonary disease not advanced especially if the patients tolerate well operative interference, removal of the disease portions from the arytenoid area, or the epiglottis is perfectly justified.

The operation of arytenoideclomer seems often to be followed for a while at least by a considered relief from the dysphagia which is a great advantage by letting the patient take his much needed nourishment.

The objections to these operations are that they may be followed by a serious hemorrhage, and an alarming reaction. It is contended also by some that they

promote a lighting up of a latent pulmonary disease or bring on a general tuberculosis.

The electric cautery possesses decided advantages in that it obviates these objections and at the same time accomplishes just as thoroughly a destruction of the tissue. It is followed, contrary to the general opinion, by practically no reaction, and in the hand of a practised laryngologists is both safe and effective.

Electrolysis has also been used but the results have not been as satisfactory as from the use of the electric cautery. It has been observed that in cases in which a tracheotomy had to be done of a threatening stenosis, that the tubercular process in the larynx has generally improved, and some of the authors have on this ground recommended it as a desirable procedure, even when not compulsory. But few physicians can bring themselves to advise an operation of this magnitude which can promise only a doubtful temporary relief, especially as the wearing of this tube attended with discomfort and may be a source of irritation.

We have spoken here only of the local methods of treatment; but we do not of course wish to be understood as considering these as all sufficient in the treatment of tuberculosis in upper air passages. We were obliged to confine ourselves to the treatment particularly applicable to the disease in these localities, but we feel that it is not necessary to insist that the general hygienic measures and climatic conditions which are so beneficent to tuberculosis in general have their place here as well, should as far as possible supplement our local treatment.

SIMPLE OBSERVACION CLINICA

POR EL DOCTOR GUSTAVO ESCOBAR, DE MANAGUA, REPÚBLICA DE NICARAGUA.

Una enfermedad nueva, desconocida hasta ahora por la patología médica, llama hoy entre nosotros la atención é inspira á los vecinos de Nicaragua gran temor por la semejanza de sus principales síntomas con los de la fiebre amarilla.

Aunque los agentes figurados y parasitarios constituyen la etiología de esa enfermedad, es sin embargo una fiebre que no figura en grupo alguno de las enfermedades bacterianas.

Su naturaleza constituida por esta etiología viviente, solo es sospechada, y su tratamiento puede seguirse por analogía. La investigación científica de esta fiebre, es obra exclusiva, tal vez, del genio médico.

Esta fiebre en raros casos se inicia por un violento escalofrío, y en otros, por una sucesión de refrigeraciones ágiles aparentemente inofensiva, y está caracterizada:

1º Por la ligera elevación de una temperatura que marca en el paciente de 38º á 39º centígrados, y algunas horas después se eleva hasta 40º

2º Por el aumento de las pulsaciones normales.

3º Por golpes subjetivos que el enfermo siente en la cabeza y en la región lumbar, y

4º Por inapetencia, sed intensa, vómitos de materias oscuras y también por la fetidez cadavérica que el enfermo exhala de la boca cuando habla.

Al fin de este cuadro de fenómenos clínicos que tienen una duración media de uno á cuatro días, principia el segundo período que podría ser llamado de remisión, y dura regularmente de uno á dos días, y está señalado:

1º Por un sudor copioso.

2º Por un descenso crítico de su temperatura al grado normal, y

3º Por la vuelta del pulso á sus cifras comunes.

En algunos casos la cura puede llegar á ser completa, especialmente en los hijos del país; pero por desgracia repentinamente la temperatura se hace subnormal, empeora su estado y entra la enfermedad en un tercer período en que el paciente se pone amarillo y que podía llamarse estado de ictericia. Dura este período de uno á cuatro días, y arrastra los más grandes peligros para el extranjero.

En este período se presentan:

1º Vómitos negros.

2º Hemorragias en las cavidades nasales, y

3º Sangre de color muy oscuro en sus materias fecales; y por último, el enfermo sucumbe tras síntomas de creciente colapso.

La enfermedad en referencia, es una infección exógena, debida á la importación en el organismo de un parásito microbiano. Al empezar los síntomas de invasión, es muy posible confundirla con la atrofia aguda amarilla del hígado, con la tifoidea biliosa, con la fiebre amarilla y con la intermitente biliosa.

El contagio de la fiebre en cuestión, siempre lento y moderado en su desarrollo, sigue el camino de aglomeraciones humanas, como sucedió hace algún tiempo en el Cuartel de Momotombo en Managua, y poco ha en el Campo de Marte.

Se distingue de la fiebre amarilla, porque no se propaga como ésta, por las grandes vías de comunicación, terrestre, fluviales ó marítimas. Cuando las relaciones internacionales multiplican los contactos humanos, la fiebre amarilla, como cualquiera otra enfermedad de naturaleza epidémica, se desarrolla con gran rapidez sirviéndose de las naves como escala principal.

El enfermo atacado de esa fiebre desconocida constituye el principal peligro de la infección.

Sobre él deben actuar las precauciones profilácticas. Si el aislamiento del enfermo es difícil, no es menos eficaz el aseo en la casa, en las ropas y en la persona del paciente. Debe hacerse sobre todo su cuerpo un baño diario de alcohol helado.

Media onza de creolina en un litro de agua común y pura, regada todos los días en el interior del edificio y principalmente sobre las excreciones, sobre los productos alterados y hasta sobre el cadáver, es una medida muy cómoda y eficaz de desinfección.

La leche mezclada con algunas gotas de alcohol y hielo, en estos casos, constituirá un recurso poderoso como alimento y como antiséptico digestivo.

Si la inapetencia es absoluta, se mantendrán las fuerzas del enfermo y la antiseptia intestinal por medio de un enema, compuesto de medio litro de leche asociado á veinte gotas de espíritu de alcanfor y dos de ácido fénico administrado dos veces al día.

La buena ventilación y las bebidas abundantes heladas y ácidas, son de mucha utilidad para el enfermo.

No es conveniente llamar en auxilio de la defensa orgánica, el ácido salicílico, el sulfato de quinina, la creosota el yoduro de potasio ni el aurocloruro de sodio, porque nada pueden estos agentes contra dicha fiebre.

El estado sanitario de este país es bueno. El número de defunciones producido por esa fiebre no ha sido crecido, y hoy esa epidemia ha desaparecido completamente.

Managua, Diciembre 20 de 1904.

GUSTAVO ESCOBAR.

PREVENTION AND REDUCTION OF DEFORMITY IN POTT'S DISEASE.

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It must be very evident to any one who has paid the slightest attention to the subject, that our treatment of Pott's disease is not as successful as it should be—not nearly as successful as it can be made to be. Were our treatment as ideal as it should be, there would be fewer cases recovering with marked deformity.

The fact that many of these cases are not treated at all until the deformity is very marked, and also the fact that many are treated by unreliable men—men who have no mechanical ability and merely make a pretence at treatment—taking both the above conditions into consideration, there is still left a large number of cases that become deformed beyond the slightest hope of correction,

while under the care of most excellent surgeons, and while wearing a plaster jacket or other appliance suppose to hold the spine perfectly steady. Better results can be obtained, and we are not doing ourselves justice when we fail to obtain them. The writer is of the opinion that no case taken in the early stage, before there is any deformity, or before the deformity is marked, need recover with anything but a perfectly normal spine, so far as contour is concerned, and many cases, probably fifty per cent who come to us in the later stages of the disease,—that is, the subacute stage, when the deformity is quite marked, can have the deformity reduced one half or entirely.

In tubercular osteitis of the knee or hip, we expect the child, under careful treatment, to recover with a straight and usually ankylosed knee or hip. To obtain a like result in Pott's disease is obviously a more difficult task—more difficult because the leverage is so small as compared with the available leverage in the case of a knee or hip, and because of the difficulty of applying a jacket or corset as snugly as you can a spica or knee bandage. But merely because it is more difficult, is certainly no reason for considering it impossible, or no reason for being satisfied with a recovery with only a reasonable amount of deformity. Our aim and expectation should be no deformity. I am not taking into consideration the cases in which we haven't the co-operation of the parents and patient, factors that are absolutely essential

There is no one single line of treatment that is applicable to all cases. As in all other pathological conditions, each case must be according to the special indications. So far as we know, there is no medicinal treatment in any way, shape, or form that has proven of the slightest benefit. Injections of Iodoform emulsion into the diseased

vertebrae have been tried and retried in this country and abroad, and we have no reason to think that any of the cases have been benefited by that treatment. Aside from such remedies as may be needed to keep up the general tone of the system, the treatment is purely mechanical.

All cases should wear some support, no matter whether the patient be confined to bed or not. The plan, so frequently pursued, of advising rest in bed, and not insisting upon some form of support, is just as far from being correct as it would be in the case of a tubercular knee or hip.

Cases under three years, or in undersigned children under four years, are best treated by being placed securely on a rectangular gas pipe frame. The frame should be made of gas pipe about $\frac{3}{4}$ inch in diameter, and three to six inches longer than the child, the width being slightly less than the transverse diameter of the child measured through the mid-dorsal region. Any plumber can readily construct such a frame at small expense. The pipe should be wrapped with a muslin bandage, or adhesive plaster and afterwards covered with a muslin bandage, the covering extending to within six inches of the foot of frame. This bandage is put on by simply passing the roller round and round the frame from top to bottom overlapping about one half each turn. Over this a covering of canvas is securely fastened. This canvas should be wide enough so that after covering the front and passing over either side to the back and being securely laced so as to give a firm bed, there will still be a space of an inch or so intervening between the edges of canvas. The length of canvas should be slightly less than the inside length of frame. The lacing in the back, extending from top to bottom of canvas will secure perfect transverse firmness; and perfect longitudinal firmness, is secured by means of straps and buckles, the

straps passing from edge of canvas anteriorly over the end bars, and being secured by buckles to edge of canvas posteriorly. Four straps are sufficient—one on either side both top and bottom. On either side of frame there are fastened to the canvas three buckles, wide enough apart so that the distance from top buckle to bottom buckle will cover the space that is to correspond to the chest and abdomen of the child. To these buckles a canvas apron is secured, the object being to hold the child firmly against the frame. At point on canvas that is to correspond to the seat of disease, sew two pads, preferably made of felting. Pads should be about one half inch thick, from three-fourth to one inch wide, and usually about three or four inches long, and be placed longitudinally one-half to three-fourth of an inch apart. In sewing on pads, the threads should pass through the edge of felting rather than the exposed surface in order that the threads may have no chance to excoriate the skin. A covering of rubber sheeting is sewed on to the canvas from a point opposite the sacrum to a joint opposite the knees.

At a point opposite the kyphosis the frame should be bent, the convexity of the bend being towards the kyphosis. The amount of bending depends entirely upon the child. Some children readily tolerate a great deal of hyperextension, while others will tolerate very little or none. Sometimes for the first few days, until the child gets used to the frame, it had better be used perfectly straight. Ordinarily the frame should be bent to an angle equal to the angle of deformity.

To this frame the child is securely fastened by means of the canvas apron, until all acute symptoms subside or preferably until the cure is complete. This may be any where from six or eight months to several years, but by the end of that time there will be either a complete disappearance of the deformity or a very marked recession.

In all cases, where there is no deformity in the beginning of this treatment, you can be absolutely certain that none will appear, and where the deformity is slight, you can be almost equally certain that the deformity will disappear.

The canvas apron above mentioned, should pass beneath the child's outer clothing, so as not to disturb the position of the child by the process of dressing and undressing. Owing to the presence of the rubber apron there is no necessity for taking the child off the frame for defecation or urination.

If for any reason, it becomes necessary to take the child off the frame for a short time, he should be placed on his back with a small firm pillow just beneath the Kyphosis. Under no circumstances should the child be allowed to sit up without a support

If deemed advisable, after the acute symptoms have subsided and the deformity is practically nil, plaster jackets may be applied, and if properly applied and kept on without the slightest intermission until the cure is complete, no deformity will ever result. The frame here described is fully described and illustrated in "Whitman's Orthopedic surgery."

In cases past four years of age there is no brace so universally successful as the plaster of Paris jacket properly applied and on the other hand there is no brace that is abused more, no brace that gave such poor results as the plaster of Paris jacket improperly applied.

It is nothing uncommon to hear of cases in which the deformity has increased during the period when the child was wearing a plaster of Paris jacket. I am firmly of the belief that lack of watchfulness upon the part of the physician and parent and improper and careless technique upon the part of the physician, are the factors that are to blame in nearly every case showing an increase in deformity.

Every jacket should be so carefully, so smoothly applied that no pressure; sore or other complication is going to arise that would necessitate its removal for a few days. To thus wear a jacket intermittently is almost as bad as to wear no jacket at all. One case will suffice to illustrate this point. A. O., eight years of age, entered hospital with high dorsal Pott's, no deformity. Treatment during following two and one-half years consisted entirely of plaster of Paris Jackets. A number of times during the two and one-half years the jackets were applied in such a manner as to be very uncomfortable, and to produce pressure, sores, thus necessitating their removal for a few days or a week. During these periods, the child was kept in bed wearing no apparatus. At the end of two and one-half years, deformity was extreme.

Most cases with a marked deformity give a history very similar to the above. So long as jackets are applied the least bit carelessly, so long as we get pressure sores and have to lay aside the jackets just so long are we inviting deformity. Another factor that is so productive of deformity is failure to carry the jackets *very high*, as well as *very low* in front. Of what possible value can it be to carry a jacket high and low in the back and cut it off short in front? To do so simply encourages the spine to bend forward above the point of disease, thus increasing the deformity. Obviously the higher the seat of disease the higher must we carry the jackets, so that in some cases of high dorsal or cervical Potts, the plaster should be carried up so as to support the chin and occiput, the plaster being moulded to fit the parts. As a general rule, we may say that the efficiency of the jacket increases exactly in proportion to its length, particularly its length anteriorly, owing to the greater degree of fixation.

The position of the patient during the application of the jacket is another factor that is of the greatest importance.

Without taking time to quote statistics we may say that the vertical position is by no means as effective as the horizontal, owing to the fact that in the former case we get very little hyperextension and therefore little reduction of deformity, whereas in the latter case we are able to get most any amount of hyperextension and therefore a great deal of deformity.

The horizontal position is the best maintained by means of the Taylor kyphotome, the Ridlon bridge, or the apparatus of Goldthwaite. Full description of these various methods may be had in standard text book on Orthopedics.

The important thing in either of these methods is to produce the maximum amount of extension at the seat of disease, and having obtained such extension to apply the jacket *high enough* and *low enough* that you will lose nothing that has been gained, and to apply it so smoothly and so strong, that a change under four months will be unnecessary.

The stockinet shirt or under vest, whichever is used next the skin, should be pinned or tied over the shoulders and pinned between the legs, care being taken to stretch it perfectly tight so that no wrinkles will result.

Pad the prominent places lightly, and bevel all pads so as to avoid any ridges. If every layer is applied firmly, *perfectly smooth* and, *thoroughly rubbed*, you need have no fear of pressure, and the jacket thus made need not be over a quarter of an inch thick to last fully four months, and should weight about one pound and should not have a suspicion of a wrinkle in it from top to bottom.

In this paper I have made no attempt to say anything regarding the many complications of Pott's disease, neither have I tried to take up the treatment of the

different spinal sections separately. Nor have I said anything about the many forms of treatment, other than the gas pipe frame and plaster jacket. There are many other methods that are doubtless very good. One of the best results I have ever seen was that of a child treated for three years in a Taylor spinal brace. But the frame and jacket are always good, can readily be used by most practitioners, and are not expensive.

In conclusion the following general summary may be made.

1^o Cases seen before the stage of deformity should never be allowed to develop deformity.

2^o Deformities in the acute or subacute stage can be reduced one-half or entirely.

3^o Children under three years are best treated on the bent gas pipe frame.

4^o Cases over three years are best treated by the application of a *solid* plaster of Paris jacket.

5^o Perfect technique and careful attention to little details are absolutely essential.

92 State St.

TRACHEOTOMY FOR GUNSHOT WOUNDS OF THE TRACHEA.

BY J. MCFADDEN GASTON, A. M. M. D., ATLANTA, GA.

In discussing the subject of gunshot wounds of the trachea, we are aware that we have to deal with a wide range of injuries, with the complications that may occur from septic infection or laryngeal stenosis. This class of cases is very considerable source of death. Even in small wounds a laryngeal stenosis or defective voice, if not a fistula, may occasion trouble. As treatment needs to be prompt and well directed to the case, the prognosis is often serious when a gunshot wound occurs.

As to the secondary diseases following tracheotomy, secondary hemorrhages have been known to take place during the after treatment. Erosion of the innominate artery from pressure of the tracheal tube has been attributed to low tracheotomy or suppuration by Korte-Guadisher, Maas and others. Fatal secondary hemorrhages have originated in the lungs.

In the final process of repair, we find granulations; which by their presence and position occasion trouble. They may be in the tracheal wound itself or in the margins of the trachea, where the tube has abraded a sufficient amount of mucous membrane to stimulate their growth.

This may occur where the curve of the tube presses upon the posterior wall of the trachea and in cases of phonation tubes which contain an aperture. The margins of this aperture should be very smooth or they will occasion this trouble. A valve-like enclosure of the trachea by granulations has frequently given rise to asphyxia when the tube was needed to prevent eminent death. A sharp spoon or the galvano-cautery may be applied to such granulations and their destruction accomplished, when it is not thought best to remove them by a pair of scissors with forceps. In such cases, a continual source of inconvenience is blood which has been known to cause instant death when inhaled into the lungs. Although in cases of diphtheria, the tube is often removed in a few days, and the wound from tracheotomy heals kindly, there is cause for a greater delay for prudence-sake in gunshot wounds where stenosis has occurred from oedematous laryngitis.

N. T. (female) aged 8. with a history of good health, except a few of the diseases of childhood, was shot through the neck and right shoulder, July 3, 1904. The wound of entrance and of the exit of a ball from a 38 calibre pistol, was in a line with the larynx, while the wound in the shoulder was in the line of the acromion process, and the exit ranged somewhat backward of the scapula. In the course of the bullet a shot of this kind would probably traverse the trachea and the soft parts of the neck, and also the shoulder joint, involving the capsule.

Her condition was quite serious, due to hemorrhages and obstruction of the larynx from oedema. The wounds

were dressed by Dr. J. N. Brawner, who saw her soon after the wound was received. A swab of bichloride gauze was used to disinfect the tract of the bullet. The family physician, Dr. J. W. Carmichael, was also called and assumed charge of the case. The disease known as oedema of the glottis was supervening, when I was called in July 4th, with the request to be prepared to do tracheotomy.

In many respects this case is unique and needs no apology for claiming the valuable time of this Association. S. D. Gross has called tracheotomy the dread of surgeons, and explained to us that while laryngotomy is easy and safe, that tracheotomy is far from being so. He has also warned the student of surgery against the cases of children where the neck is short and fat. While surgeons are familiar with the anatomy of the neck and with the technique of tracheotomy in the cases of obstruction from foreign bodies and from the tumors of the larynx and inflammatory products of diphtheria, it is rare for a gunshot wound to occasion this operation. Such wounds in children are particularly uncommon, and in little girls almost unheard of, from the fact that they are usually protected therefrom.

The object of the man who shot this little girl was to convince some tramps that he was prepared to shoot. The tramps were in a coal-car and had already given trouble on the way to the city. The circumstances are such that a surgeon should consider, as they have given rise to a damage suit for \$20,000 (twenty thousand dollars) against the railroad company, and the imprisonment of the man. In this case the little girl was standing up on a gate in her parents back yard to see the approaching freight train which comes by in a cut in the road below, when she was shot in the manner described. The flagman or conductor of the freight train was standing on

the top of the box car and discharged a pistol shot, which took effect in the little girls neck. His connection with the case was that of an agent of the road in the discharge of his duty.

The symptoms presented were dyspnea and distress and a decision upon operation was based upon the necessity for drainage and an open wound, although no rise in temperature or chill betokened a septic infection.

In this case the physicians in attendance, Drs. J. W. Carmicheel, J. N. Brawner, H. M. Clarke, and myself met at the house of the child at Howell station, a few miles from Atlanta, to perform the operation. Our idea was to incise as for tracheotomy and judge of the necessity for an incision into the windpipe from the character of the wound in it. A thorough preparation of the field of operation was first made, and a considerable time before the operation, a hypodermic of 1716 grain of morphine and 17600 grain of strophine sulphate was injected. Chloroform was administered by Dr. Carmichael. The patient being in a position of extreme extension of the neck and the head hanging over the edge of a table, enabled the operator to make an incision in the middle of the anterior portion of the neck. The wound was sponged with adrenalin chloride solution, with a normal saline solution and was comparatively free from blood.

The necessity for haste in the steps of the operation became apparent when the region of the trachea was reached and probably some blood may have entered the gunshot wound in the windpipe. A violent asphyxia left no room for doubt and no time for indecision; and the string that had been tied in the muscles was lifted so as to expose the glistening white trachea, which seemed to be about the calibre of lead pencil. A thrust of the knife and a tube following its opening in the trachea were the steps of the operation done in the emergency. The

time taken was less than for describing this part. The seizure of the patient by the feet and the suspension of the body of the child, led to a resuscitation. The patient was allowed to regain consciousness and to breathe before the completion of the dressing. No sutures were placed in the trachea, and only a silk suture in the hyoid muscles served to keep the patient's trachea in position of ready access in case of danger to her suffocation should the tube be disturbed or dislodged in coughing.

The position of the incision into the trachea was lateral rather than on the anterior surface of the windpipe. The condition of deflection from the normal position of the trachea made it extremely difficult to reach, so that more than one attempt was necessary in order to reach the trachea. In a child the trachea is quite deeply situated. An extravasation of blood is apt to occur, especially when the blood vessels are already congested. The child was very weak and yet regained her strength sufficiently to be able to leave her bed in her efforts to be comfortable.

A trained nurse, Miss Alva Garner, was detailed from the Tabernacle Infirmary, and had constant oversight over this patient for nearly four months. She learned to take out the inner tube, cleanse and replace it, and to manage the child in a gentle but firm manner.

The child's temperature was as high as 103° when she was suffering with the Bronchitis, incident to the injury to the trachea.

After the operation, a prescription adapted to the bronchorrhea was as follows; "Camphorated Tincture of Opium, 1 drachm, Carbonate of Ammonia, 1 drachm, Oil of Turpentine, 1 drachm, Camphor water, two ounces, Mucilage of Acacia sufficient for six ounces. M. Sig. Take a teaspoonful every three hours."

Her respiration at 8 p.m. on July 4th, the day of the operation, was 30; pulse 130, temperature 102-3-5. She was breathing quietly and was able to drink a small amount of water without nausea. She was breathing quietly and slept short naps later when I visited her. I was importuned to let her have some water, which being drunk, was returned clear by the stomach. As she became quite restless in the midnight hour, she was given ten drops of paregoric with good effect, perspiring and resting well after 1.30 a.m.

The usual medicines which avail for bronchitis were kept up; antiseptic dressings were used while the nurse was given instructions as to the manner of removing the inner tube in order to cleanse it of mucus, which being of a doughy consistence often obstructed the lumen of the tube. On one occasion particularly, it became necessary to do this; and frequently afterwards, as the obstruction to air was complete, and the nurse reported the viscid condition of the mucus to be such that a stick was inserted in the tube before a dislodgement was effected. The patient responded well to the treatment. On the 9th of July, only five days after the operation, she was considered on safe ground. A photograph was taken on the tenth day, when she was able to be out on the porch. The weather was warm and dry, greatly facilitating her respiration through the tube. About a month after the large photograph was taken, another likeness of the little patient was secured, and appears as evidence of her continued use of the tube without serious inconvenience. There were spasmodic coughs when the inner tube was removed, generally relieved by a little water. The mucus was examined by Dr. Ephraim Smith, August 22, 1904, and no pathogenic bacteria were found microscopically. The tube was removed three times daily for thorough sterilization. The nurse was allowed to leave the patient for some hours,

and no ill results were feared. On the whole, the patient continued cheerful and happy. Her condition of health was improved with tonics, and in order to secure a closure of the opening made by the operation before cold weather set in, it was thought best to remove the tube. On the 19th September, we had intended to test the matter of her ability to breathe by the ordinary channel, and if the air passages seemed to permit, to have her dispense with the tube, and we secured the services of another trained nurse in the absence of the one who had been so satisfactory, but had been obliged to return to the Tabernacle Infirmary. Dr. Carmichael gave the anesthetic,—pure chloroform, and the patient breathed very well with the swab applied to the mouth of the tracheotomy tube.

During the application of anesthetic in this way it was necessary to remove the tube when the breathing was not so satisfactory, and the only explanation of a violent cough was that adhesion may have been somewhat broken and a drop of blood allowed to enter the trachea. Her violent efforts to remove this blood were effectual and portions of mucous and blood were expelled with force sufficient to reach the glasses worn by me: and to force me to replace the tube, which fortunately allowed the air free access to the trachea and respiration was resumed. As this was done so readily, it was obvious that the tube could be removed and replaced without trouble by the nurse. This was due to the adhesions that had taken place between the edges of the wound in the trachea and the external wound. The condition of the parts was very favorable to granulations, which were expected to fill up the opening. In order to test the matter again, our patient was replaced under chloroform again, and it was under more favorable circumstances. She was at the tabernacle Infirmary where her general condition could be looked after more fully so that at any moment the tube

could be replaced by a nurse. The result showed this to be unnecessary, but at the same time, the indications were that it would be needed.

On September 22, 1904, the tube was removed, and the patient breathed without great difficulty even through the wound. When this was held together loosely by the fingers, her breathing was shown to be through the natural channels. She had been thoroughly anesthetized in order to have no excitement and the ordinary natural breathing would be possible.

With a child, habit is a secondary nature indeed, and with this child, breathing through the tube nearly three months was fast becoming her mode of breathing.

Reasoning that any interference with this would occasion some involuntary struggle, we sought to remove all the reflexes.

Her power to resume her normal mode of respiration was assured when a piece of gauze was arranged in the form of a cone, and she was allowed to breathe with the external wound closed in this manner, holding it in position at first and afterwards using adhesive strips to retain the gauze. The gauze was carried to the edge of the tracheal wound, and fixed here. Then the whole neck was encircled with the gauze bandages.

When the girl awaked, she was with her nurse, but cried and sobbed audibly, as she had not been able to do before. Her recovery afterward was uneventful, no disturbance of the inner gauze plug was permitted until she was in a better position to breathe with no interference from without the trachea.

As soon as the tracheal wound itself could be closed, she would be on safe ground from the source. Granulations from the bottom so crowded the orifice in which

the gauze cone was situated, that she was allowed a short respite from dressings to have perfect rest to the tissues. Permanganate of Potash Solution. 1/1000 was applied before anything was done to the internal ones. No medicine save those she had been taking were required. She gave no trouble to the nurses except when a dressing was needed. Her health was such that she walked about the Infirmary and assisted the nurses. Her voice regained all its childish tones and she left the Infirmary October 16th, less than a month after she entered, with perfect cicatrix and no fistula.

I wish to draw special attention to the position of the incision as it differs materially from any tracheotomy I have seen described. I believe it is an improvement so far as the use of a tube as commonly made goes. As has been said, the tube frequently presses with a great deal of force upon the posterior walls of the trachea, and at times this pressure has also extended to the anterior walls of the oesophagus thus interfering seriously with the deglutition. In this respect, no pressure was made which could have inconvenienced the patient, as she could swallow both liquids and solids.

THE COMPLEMENTAL RELATIONS

OF GLYCOSURIC AND ETHEREAL SULPHURIC ACIDS AND
THEIR PAIRINGS IN AUTO-INTOXICATION, TYPHOID
FEVER AND CANCER.

A. E. AUSTIN, M.D. AND E. W. BARRON, M.D. BOSTON.

Among urines which reduce Fehling's solution, but which do not contain sugar, are found those which contain large amounts of uric acid, and those which contain glycorunates. The urine which contains the latter can be readily distinguished by the following characteristics:—

It reduces Fehling's solution slowly requiring nearly five minutes for its reduction and does not contain the usual red suboxide of copper, but a greenish-yellow product which may be hydrated suboxide. Such a urine has a left-turning power in the polariscope and does not ferment. Its reducing power is greater than its turning power and it gives the Tollens reaction with phloroglucin.

This substance, glycosuric acid, has never been found free by any one except Paul Mayer. He claims that when 20 grammes, at least, be injected into a rabbit, the urine contains a 'right turning substance' which reduces, and

does not ferment and upon this bases his opinion that the free acid may be eliminated. Ordinarily, however, we find this acid induced either by the ingestion of some aromatic substance, which, by pairing with the glycosuric acid, prevents it from further oxidation, or by the ordinary aromatic bodies produced in the intestines. These artificial pairing substances may be camphor, chloral, thynol, borneol, antifebrin, or morphine, and innumerable others, the recounting of which would not add to the interest of the subjects and would only show a reduplication, of the principal ones already given. Ordinarily the pairing bodies which are found in the urine are such substances as are formed in the intestine. indoxyl, skatoxyl, phenol, cresol, etc., the products of albuminous decomposition. To such an extent are these present, even under normal conditions, that Mayer and Neuberg; by using enormous quantities, at least 50 litres of normal urine, have been able to show that 40 mgms of glycosuric acid per litre is present.

Of these, only the indoxyl produces a reducing agent, while the phenol compound does not reduce.

As to the source of glycosuric acid, two theories have been advanced: first, that it comes from the oxidation of dextrose which is not carried to its farthest limit, carbon dioxide, and which, presumably from the greater difficulty of oxidation of a paired glycosurate, is held at that stage of the process. This theory is the one maintained by Mayer, who bases his opinion upon the following grounds: That when the rabbit has been made glycogen-free by starvation and camphor is given, only a small portion of glycosuric acid can be found in the urine, but if, at the same time, dextrose be given freely, this acid is very largely increased. On the other hand, it is not impossible that this acid may be produced from the glycoproteid, or even from ordinary serum-albumin, that is, from the carbohydrate portion which almost every urine

contains. Leowi attempts to demonstrate this by producing phloridzin diabetes in a dog, and by giving camphor, on the principle that if the glycosuric acid is formed from the dextrose, there will be an increase in the glycosuric and a corresponding diminution in the amount of dextrose eliminated. He found, however, that while the glycosurate was present in fairly large amounts, there was no decrease in the amount of glucose, and from this he concludes that the acid comes from albumen. A case under my own observation proves the same. A young man passed, on several days, approximately 5,000 c. c. of urine, which usually contained 5% of dextrose. His food during the entire period consisted of beef, veal, lettuce, spinach, three to four eggs: ham and one roll daily, weighing 30 grammes. On one day on which these observations were made, the amount of urine was 4,680 c.c. The polariscopic reading showed 4.5% of dextrose, while the reduction showed 5.2%. After complete fermentation the urine was markedly laevogyr and there was isolated from this 2.456 grammes of a glycosurate. Here we can only conclude that not only the greater part of the dextrose, but also the glycosurate, must have come either from the albumen taken, or from the man's own tissues.

The place in which this acid is formed is still in doubt, we have the experiments of Glaessner and Embden to show that phenol sulphate, an analogous body, is formed in the liver and presumably the glycosurate is formed in same organ. But it has been shown that when the liver is largely destroyed by arsenuretted hydrogen the formation of glycosuric acid in a normal amount still continues.

Furthermore, it has been shown that in injuries to muscles, through factured bones or bruises, there is a glycosuria produced which may be accompanied, presumably, by the glycosurates, but we are still lacking actual evidence of this accompaniment.

Mayer further shows that glycosuric acid may come from a faulty oxidation caused by dyspnoea, and has actually found this substance, as he claims, largely increased both by tying pharynx in animals, and also in cases of asthma. Wohlgemuth has also adduced an interesting example of this in dyspnoea from cocaine poisoning, in which this acid was so largely increased that he was able to isolate in crystalline form a large amount of cresol glycosurates. Another interesting fact with reference to this case was the fact that sometimes one, sometimes the other, sometimes both, occur under certain conditions, like poisoning with morphine, chloral, etc. Carbon monoxide produces, also, as is well known from accidental poisonings with water gas, a glycosuria of long standing, but no efforts have as yet been made to determining whether the Glycosurates are increased under these conditions.

We now come to another body which seems to have analogous relation to aromatic bodies. that is, sulphuric acid, as you well know, exists in two forms, united with such bases as sodium and potash, or is paired with as great a multitudes of aromatic bodies as glycosuric acid has been found pair with. They both has the power, apparently, of rendering innocuous many poisonous substances, such as phenol, morphine, etc., and when a certain amount of any of these poisonous substances is given it unites itself to both.

Naturally, the following questions then arise:—Why does not all the aromatic body pair with the sulphuric acid? or does it do this to the exclusion of the so-called preformed sulphate and the excess only, unite with glycosuric? or is the latter fully saturated, and does the excess only, unite with the sulphuric? In the last case, necessarily, the glycosuric acid must be increased at the expense of the ethereal sulphate. In the first case the

sulphur must exist only in the form of ethereal sulphate, without reference to glycosurate. And last, the question arises,—if such bodies pair with both, what proportion pairs with each acid.?

Three classes of cases were taken in order to illustrate this very interesting problem. The first class included cases of auto-intoxication, in which there is noted an increase of indol and skatol, either from intestinal obstruction or from accumulation of pus.

The second class includes typhoid fever, with temperatures usually of 39,2. C., on a milk diet, where, according to authorities, the oxidation of glucose is always very limited.

The third class includes one case of cancer of the liver where indol has always been shown to be increased. Such cases also offer a very good opportunity to determine whether an increase in glycosuric acid is necessarily associated with an increase in the pairing body, and whether, when the pairing body is present in normal amount, it may have a greater affinity for glycosuric than for sulphuric acid.

The urines of all these were first freed from the glycosurates, then the remainder used for separating the ethereal sulphate in one portion and the preformed sulphur in another. The glycosurates and the ethereal sulphates were split, and all four of these factors were quantitatively estimated. The results were very curious. In the first group, in 66% of the cases less indoxyl united with the glycosuric acid than with the sulphuric, while in the remaining cases the reverse was true. There was always a surplus of sulphuric acid in the form of preformed sulphates, though this amount was very much diminished in the first group, with reference to the second, amounting to only one-fourth as much.

In the typhoid fever, or second group, there was in 50% of the cases, more indoxyl united to glycuronic acid than to sulphuric acid and, in 50% the reverse was true.

There was also an enormous amount of performed sulphate, amounting often to 70% of the total sulphuric acid present.

In the cancer of the liver, the greater part of the indoxyl was united to sulphuric acid. In no case was the glycuronate formed, apparently, at the expense of the ethereal sulphate, and in no case was all the sulphur used up in the production of the latter. In typhoid fever and cancer the very large amount of sulphuric acid is probably accounted for by the rapid breaking down of the albuminous tissue of the body, whereby sulphur is set free. It is very plainly evident that the glycuronic acid is first saturated and the excess of the aromatic body unites with the sulphuric. Hence, it seems safe to conclude that the formation of the glycuronate is due to the presence of the pairing body and not to deficiency of oxidation. The increase of the glycuronate is apparently not necessarily due to the increase of the pairing body, and why there should be more glycuronic acid available under certain circumstances than under certain circumstances than under others still remains a problem.

Since the discovery by Salkowski that there exists in the liver an enzyme which he calls oxydase, my suggestion is that possibly the pairing body unites only with that dextrose which oxydised in the liver, leaving the vastly larger part of the carbohydrates which exist in the muscles, to be oxydised to the higher products, oxalic acid and carbon dioxide.

Mayer offers in explanation, the theory that only a portion of the dextrose passes through the stage of glycuronic acid, offering no explanation for the greater or less

amount, unless it be his supposed diminished oxidation, a fact that is not yet fully established.

Mayer also found that when glycuronic acid was injected into a rabbit, oxalic acid was found in much larger amounts than in the normal rabbit. From this he draws the conclusion that there is a progressive stage of oxidation in the body, from dextrose to the final carbon-dioxide. He found, further, that when glycuronic acid was mixed with macerated liver substance a corresponding increase of oxalic took place. But this, however, does not necessarily follow; because one of the authors of this paper has shown that oxalic acid may also arise from glycol, which naturally is also extremely abundant in the liver. Had Mayer shown a diminution in the glycuronic acid thus employed, the evidence would be much more positive. There is, however, as shown by others and observed by the author, a marked association in diabetes, of dextrose, glycuronic, and oxalic acids, in the urine. This is particularly true in those cases in which the glycosuria is due to the inability of the liver cells to convert dextrose to glycogen, and we may conclude that the liver certainly has something to do with this formation of glycuronic acid.

To return to the result of the experiments, we may remark that skatoxyl was never separated from indoxyl and where the latter is mentioned both are included.

In group 1, we find that the first case contained three times as much indoxyl as the third, and nearly one-half as much glycuronic acid.

In the second group, 2 and 3 contained twice as much indoxyl as the others, and respectively four and three times as much glycuronic acid, while both contained less of the latter than the 4th. Hence it is evident that glycuronic acid is not increased in proportion to the increase of indoxyl.

Another fact to which reference has been made is, that the limit of sugar absorption is very much impaired in fever. It has been demonstrated by Strauss that if 100 grammes of dextrose be given a fever patient, a large percentage of the same is eliminated in the urine. From this we naturally infer that when several cases, both of fever and other pathological conditions, are compared, the amount of glycuronic acid would be much larger in the fever cases than in the others, if it were due to family oxidation. Here we find, however, that the largest amount of this acid, .18% of 1% in typhoid fever, does not much exceed the largest amount, .11 of 1%, found in antointoxication, while the amount found in the case of cancer exceeded all these highest amounts.

Blumenthal and Wolf, upon examining the urine of typhoid fever, also came to the conclusion that there was no relation between the height of fever and the amount of glycuronic acid, or between the amount of aromatic bodies and the latter.

Our own experience has shown, further, that there was not enough of the aromatic body to satisfy the demands of the glycuronic acid found. We must conclude then, that there are other unknown pairings, or that there may be a combination of this acid and urea, but of these combinations very little is yet known.

Our experience also conforms closely to that of Bial, that some glycuronates are much more readily split than others, which may be further evidence of the presence of these unknown pairing substances. For instance, in the case of diabetes to which reference has already been made, cooking the glycuronate 10 hours with 2% sulphuric acid in the autoclave with a pressure of 5 atmospheres and a temperature of 140, the splitting was not complete, and 14% of, the total remained unseparated. This is remarkable, because ordinarily indoxyl and phenol can be readily

split off from the acid with mere cooking during a period of two hours with 1% sulphuric acid.

To briefly capitulate the results of these experiments, we may say:—First, that aromatic bodies unite both with ethereal sulphuric acid and glycuronic acid, which apparently have a complementary relation to each other, but that the former is always first saturated before union commences with the second. The glycuronic acid apparently varies very decidedly in amount, due to causes of which we have, at present, no exact knowledge, but it is not necessarily associated with the increase of the pairing body, or with diminution of oxidation. Furthermore, there always present an excess of sulphuric acid beyond the demands of the pairing body.

CHAPTER XXI.

PROGNOSIS IN HEART DISEASE

BY THOMAS E. SATTERTHWAITE M.D.

The forecast in heart diseases involves many considerations, and is therefore beset with uncertainties. Age, sex, station in life, habits and occupation, the variety of the disease, its benign, malignant, functional or organic character, its location extent and duration, complications and accidents the constitutional diseases with which it is associated, the presence or absence of compensation, and intelligent management or otherwise are governing factors in the expectation of life.

In infants under one year the outlook is particularly unfavourable. During childhood it is worse than in adult life. Children with serious valvular diseases before eight, seldom reach adult life. As they approach puberty, heart weakness is apt to set in. Holt found that in 225 cases of congenital heart disease, 60% were fatal before the end of the fifth year, and one-half during the first two months; 16% however of the cases lived over 16 years and 8% over

30 years. Serious valvular lesions in children progress more quickly than in adults. Owing to their rapid growth, and the demands made on their strength cardiac dilatation occurs early. Acute diseases still further increase the danger to life. (Dis. of Infancy, New York, 1902).

But the danger, is not immediate. In fact, both acute and chronic endocarditis in children are rarely of themselves fatal death being due to associated conditions, such as pneumonia or pleurisy.

So we see how it is that the first years of life are especially dangerous for children with heart disease. However, according to Koplik, (Dis. of Infancy, N. Y. 1902) in mild forms of heart disease in children recovery is to be expected, but the outlook in rheumatic patients is especially unfavorable for they are apt to succumb within a few years after the first attack.

Women have a better expectation of life than men, because their lives are on the whole less strenuous and more orderly, though during pregnancy and parturition they run great risks; in the one case from the upward pressure of the abdominal organs, and in the other from the severe efforts of expulsion, with resulting cardiac strain, due to the suddenly altered circulation. Heart failure cause death under any of these circumstances. In pregnant women however the greatest distension and pressure is forwards rather than upwards. Though instrumental labor under anaesthetics is frequently resorted to, the treatment of heart complications is better understood. According to Edgar, if the disease is valvular and there is compensation, the danger to life is small, and need not be taken seriously, though artificial labor may sometimes be necessary. Mitral stenosis is much dreaded by obstetricians. If death does not result, there may be placental apoplexy or abortion. Nitrous oxide or ether are the preferable anaesthetics. During pregnancy and after

child birth strychnia is sometimes given digitalis rarely. Uncompensated endocarditis is unfavourable for mother and child.

For men whose occupations call for continuous or violent physical strain, exposure to inclement weather, especially if they take stimulants in the place of proper food, the prognosis is as a rule unfavorable. And yet among men or women who live regular lives, free from its ordinary vicissitudes, a fright or mental strain, overeating, the immoderate use of tobacco, or indeed any sudden tax on the system may cause a fatal result. In very old people a rather common cause of sudden death from heart disease, is the eating of indigestible food, or more than can be digested.

From the gradually accumulating facts about heart diseases, we are getting more definite views as to the expectation of life, and from the increasing care with which post mortems are made in our public institutions, we may expect still greater definiteness in the future. Thus far however we are still deficient in data for making accurate estimates, so that our forecasts are necessarily vague. And yet a certain number of facts governing the expectation of life are known.

It is generally admitted that functional diseases of the heart do not much affect longevity, though they certainly make the organ more susceptible to disease, while the malignant forms, whether due to new growths or infective endocarditis or carditis are pretty generally fatal. Certainly $\frac{1}{2}$ of the recorded cases of malignant endocarditis have proved fatal.

On the whole, however, myocardial diseases are less dangerous to life than the endocardial. Certainly myocardial degenerations due to the continued fevers, like typhoid and diphtheria will in the great majority of cases

disappear after convalescence, and reasoning by analogy, degenerative changes due to other cause should yield under appropriate treatment. Certainly the fat heart of corpulence will greatly improve under the intelligent application of reduction methods.

But at the same time *sudden death* occurs more frequently in myocardial disease than is generally supposed. Persons with very fatty hearts will sometimes die as if from an apoplectic stroke. The cause may be acute dilatation or embolism due to thrombi detached from the chambers of the heart in some cases rapture or they may die more gradually from extrinsic causes, such as pneumonia, or gastro-intestinal distention, more generally however from affections of internal organs, in which the lungs kidneys, liver, play the most important roles and indeed are the terminal affections.

In myocardial diseases, where there is arteriosclerosis, or in degeneration of the heart walls where there is a persistently feeble pulse, especially with difference in the radials, the darger line is always near at hand.

Mitral obstruction is more serious than insufficiency.

Mitral stenosis if severe means that the mitral disease is well established. Moreover embolism may occur as often as 20% in mitral stenosis, in my experience. In Hayden's 15 cases, death was at an average age of 29.26 years. In Broadbent's 53 cases of mitral stenosis it was 33 years for males and 37.38 for females. Samways (Brit. Med. Jour. Feb. 5 1898) in 196 cases taken from the records of Guy's Hospital found the average age at death for males was 38.4 years and for females the same but in severer stenosis the average age was 33.6 years, in the milder 43.6. In 42 fatal cases by Fagge the average age was 37.83. (Hayden, Dis. of the heart, Dublin, 1875.) In one-third of them however there was complication with other valves. According to my personal statistics in one

series of 19 cases death most frequently took place between 37 and 38, but as the extremes in these cases varied from 23 to 70 and the mean age was found to be 3.29. By reference however to page of this manual the average age at death of Dyce Duckworth's cases, 264 in number (not all however supported by post mortem evidence) was 33. In a first series of 100 collected cases. I found the average age 35, in a second series 33, Sanson found it 32.7. In another series of 57 fatal cases, ranging from 13 to 67, 26 or 45. % fell between the ages of 30 to 40 inclusive. The expectation of death is therefore in the third decade, and so far as we know at present at about the age of 34.

I have however under observation a patient of 73, with typical signs of mitral stenosis including the purring thrill.

In mitral stenosis, sudden death is as *rare* comparatively as it is frequent in aortic insufficiency. In five of my cases it was said that the disease has lasted anywhere from three to thirty years.

Aortic insufficiency is certainly one of the most dangerous of valvular diseases, but at the same time it is less so in the absence of arteriosclerosis or angina; or where there is little displacement, and the contour of the heart is not much altered.

Whether it is more grave than aortic stenosis has been questioned. In 50 of my cases the averages of age at death was 40 against 41.7 for aortic stenosis, but the stenosis, was for the most part complicated with other valvular affections.

Pure aortic stenosis has a more favorable outlook. Comparatively few cases have been recorded however. In 8 of which I have records the average age at death was 56, two reaching the age of 70 and one 90. In Hayden's

26 aortic cases 50% were combined with insufficiency. I make it 65%. Pagge says and I think with truth that in combined aortic stenosis and insufficiency the prognosis is governed by the insufficiency. Judging by my figures aortic stenosis in complicated cases is almost as serious as incompetency but much less so in uncomplicated cases. In aortic obstruction however, arteriosclerosis must always be regarded as an unfavorable sign.

But the prognosis depends largely on the grade of obstructions if little the prognosis is comparatively speaking, not bad. Broadbent found the average age at death 40 years, while his oldest case was 53. He thinks aortic stenosis less serious than aortic insufficiency or mitral stenosis, in which I agree with him on the whole. However *Sudden death* in my experience is as common in aortic stenosis as in incompetency. In both I found it 20% Hayden made it 18% in all in all forms of aortic disease.

Mitral insufficiency is compatible with a long life. This is now the accepted opinion. Indeed in uncomplicated mitral insufficiency the outlook is better than in any other form of valvular disease. The relative form is quite common after physical exercise, in recovery from fevers and in neurotic disturbances. Most athletics suffer from it at some time or other, but it usually disappears when the strain is past. On the other hand, it may be a fixture in some, as in laboring men, if there is continuous and hard strain. But simple mitral insufficiency acquired in early life appears to yield more easily to compensatory hypertrophy than any form of aortic disease.

In the organic variety it is apt to be complicated with other valvular diseases. My figures show this complication in 86%. Moreover I believe that mitral stenosis is preceded by mitral insufficiency. I am not sure that it ever causes death of itself. In fact, in a record of 102

fatal cases of heart disease. I have not found a single instance of organic uncomplicated mitral insufficiency that caused death.

To my mind therefore the comparatively harmless character of uncomplicated mitral insufficiency is established. The great danger however is that mitral stenosis, the most dangerous of the common valve lesions, will be mistaken for mitral insufficiency, the least dangerous. This error is often made, as my hospital records show.

In congenital pulmonary insufficiency the prognosis is never good, but in acquired disease I have known of one instance in which the patient reached the age of 70

In congenital pulmonary obstruction, (stenosis), the majority die before the fourth year and of tuberculosis, but the age of forty has been reached. Acquired obstruction has a more favorable outlook. Owing to the position of the valve it is apt to be compressed by external influences, such as adhesions. Of my four cases one lived to be 56, and in 15 of my collected cases 42.8 was the average of age at death. One patient (Schwalbe's) lived to be 84. But these cases are too few for statistical inquiry. Pulmonary obstruction is the point about which all congenital cardiac anomalies center, and which independent of the pulmonary lesion, are incompatible with a long life. Tricuspid obstruction is for the most part an acquired disease. It is very rarely congenital, and then is soon fatal. It is in fact the most dangerous of all valvular diseases. Usually it is in the train of organic valvular diseases and the best of them.

Patients rarely reach 40, but one of Lendet's cases lived to be 64. Exceptionally old age men reach old age one case I have reported the patient lived to be 70 Samways in 196 cases of valvular disease found 32 of tricuspid stenosis, so

that it is not extremely rare. The prognosis depends largely upon the condition in life. It is more dangerous in women than in men and in the laboring class than in those whose circumstances are easy.

In tricuspid insufficiency the prognosis is bad, it is secondary to lung disease or some other valvular affection. It is apt then to be a terminal affection. It may however be a temporary affair, and of little account. If however it persists, the significance is very grave. The order of gravity as given by Wilks, Peacock, Bristowe Fagge and Pye--Smith is

1. Aortic regurgitation.
2. Mitral regurgitation
3. Mitral stenosis.
4. Aortic obstruction.

As given by Green, (Medical Examination for Life Ins. 1900) it is

1. Aortic regurgitation.
2. Mitral stenosis.
3. Aortic stenosis.
4. Mitral regurgitation.

But Walshe made the order

1. Tricuspid regurgitation.
2. Mitral regurgitation.
3. Mitral stenosis.
4. Aortic incompetence.
5. Pulmonary constriction.
6. Aortic constriction.

On the other hand Broadbent and Leyden have it

1. Aortic incompetence.
2. Mitral stenosis.
3. Aortic stenosis.
4. Mitral regurgitation.

In the statements and figures just given however if

methods. Whether or not the claim made by the advocates of the Nauheim system that it adds an average of ten years to life, is true, it is an interesting problem and worthy of close statistical inquiry.

YELLOW FEVER IN MEXICO

PAPER READ IN THE MEETING OF THE AMERICAN PUBLIC
HEALTH ASSOCIATION HELD IN HAVANA, - CUBA
BY DR. EDUARDO LICEAGA, PRESIDENT OF THE
SUPREME BOARD OF HEALTH OF MEXICO.

Ever since the year 1893, I have imposed on myself the duty of presenting every year, a report on the course followed by Yellow Fever in the Mexican Republic, and I now come to give an account of the epidemic that raged during the past year and of the cases that have been observed during the present year in different parts of the Isthmus of Tehuantepec, in Mérida and in Vera Cruz, after which I will present a brief summary of the measures adopted during the past year to stamp out the epidemic and those that have since been carried out in order to finally rid our territory of this disease.

I

In order to carry out intentions with regard to the first point, I have the honor to present the diagrams which

represent the cases observed and mortality through Yellow Fever in the different points where the epidemic prevailed during the past year. I must first state that these diagrams do not represent the exact number of cases, because in this epidemic as in any other disease that attacks the people in general, the first cases pass unobserved. As regards the mortality, it is probable that the diagrams approached nearer to the truth, because no burials can be made without the permission of the Civil Registrar of each locality and although some of the fatal cases may be hidden through ignorance or malice, their number is very small and exercises no perceptible influence on the aggregate figures.

Another diagram also represents the cases and mortality from Yellow Fever up to the 30th of November last. As a commentary on the former, I must state that it was an entirely exceptional event for the disease to have spread so far from the coast where the original focus of the endemia is found, but on this occasion it followed the road through Tampico, Victoria, Linares, Monterrey, Nuevo Saredo, (Tamaulipas) and as far as Laredo, Texas, making short incursions to Lampasas and Monclova, outside of the main line which I have indicated, besides which it committed its ravages in the towns and villages near the cities that I have mentioned. From the other foci, Vera Cruz and Mérida, the disease spread to Coatzacoalcos, to a small town called Jáltipam, to Tehuantepec and to Salina Cruz.

Since the close of the past year, it has completely disappeared from Laredo, Tamaulipas, as well as from all the towns above mentioned in the north of the Republic. The epidemic also disappeared from Vera Cruz, and only a few sporadic cases have been observed in the fortress of Ulúa, which is situated a short distance in front of the town. In Mérida there is no epidemic but a few sporadic cases are observed from time to time, and the same thing may be said

of the Isthmus of Tehuantepec, with exception of the village of Texistepec, where an epidemic broke out that is now fairly under control.

With the above statement I believe that I have fulfilled my voluntary engagement, to declare before this meeting, the status of the Yellow Fever in the Mexican Republic.

II

I would very much like to be able to present a detailed report of the efforts, that since the year 1902 have been made in the Mexican Republic to combat the Yellow Fever and to procure its entire disappearance from the country; but such a study would extend this paper too far, and I therefore prefer to relate what was done last year for the purpose of preventing the spread of the epidemic and the measures that have since been adopted and are still being adopted, to obtain the final disappearance of Yellow Fever from our territory.

The doctrine of the transmission of Yellow Fever by means of the mosquito is perfectly known to all present, because it was in the same association that Dr. Reed, the immortal author of the scientific method of demonstrating it by experiments, which will always be remembered in the history of science, first presented it; but I find myself under the necessity of reminding you of the cardinal points of that doctrine, because the sanitary authorities of Mexico have made use of them in planning out their campaign against Yellow Fever.

Before Yellow Fever can exist, it requires a combination of the following three circumstances;

- 1 That there shall be a Yellow Fever patient;
2. That a mosquito of the genus "stegomya" shall exist, and that one of these mosquitos stings the Yellow Fever patient, and

3. That some non-immune should be stung by the infected mosquito and so be inoculated with the disease.

The problem of the prophylaxis of the disease is therefore reduced to the separation of these three factors: In fact, if there is no Yellow Fever patient, the mosquitos cannot be infected; if there are non-immunes, there is no body left to whom the disease can be transmitted.

As up to the present moment no serum has been discovered to give immunity against Yellow Fever, we cannot convert into immunes, those people who have not already been attacked by the disease. It is therefore impossible in practice to eliminate this factor; but it certainly is within our power to keep up our knowledge of it, and I will explain the methods that we have adopted in Mexico to obtain this result. In every town that has been visited by Yellow Fever, an exact list is made of all the non-immunes, taking their names, sex, age, previous residence, time they have resided in the locality that is already infected, or may be infected, and exact data with regard to their present residence. Having obtained this information, we have established a staff in each locality that daily makes a house to house inspection. Whenever one of these Sanitary Agents discovers that a non-immune presents symptoms of fever, he makes no attempt to investigate the origin of that fever, but immediately isolates the affected person, and this isolation is kept up if the observation shows that it is a case of Yellow Fever, but should it be found to be a case of some other feverish disease, the patient is granted his liberty.

We now come to the other two factors: the Yellow Fever patient and the "stegomyia" mosquito, that is capable of transmitting the disease.

The Yellow Fever patient cannot transmit the disease through his breath, his excreta, the articles of clothing

that he may have soiled or the air that surrounds him: he only becomes dangerous in the event of his being stung by a "stegomya" mosquito, and therefore the method of isolating him only requires that the mosquitos which might sting him should be prevented from doing so. This isolation is carried out by placing the patient in a room whose windows are provided with a wire guaze that is sufficiently close to prevent the passage of any mosquitos, and with double doors, each of which must also be provided with wire guaze, separated by a distance of one metre and arranged in such manner that when the outer door is opened the inner one is necessarily closed, and that in order to open the latter, the outer door must necessarily be closed. This is managed by means of a chain of a fixed length which connects the two doors. A room projected in this manner realizes the ideal isolation of a Yellow Fever patient.

The house to house visits, to which I have already referred, facilitate the discovery from the very first day, of any person suspected of suffering from Yellow Fever. The Agent who discovers a sick man, at once has him carried to the Civil Hospital if he is a poor man, to the Military Hospital if he belong to the Army, and to a special Infirmary, if he is able to pay for his attendance.

We thus find the second problem resolved which consists in the insolation of the Yellow Fever patient.

Let us now study the third point. Before the patient was discovered he may have been stung by a "stegomya" mosquito, but as experience has shown us that these mosquitos continue to live in the house in which they have already stung the patient, it will only be necessary to destroy them within that house to insure their not stinging any person who is non-immune. Experiments have shown us the special method of proceeding in order to destroy

the mosquitos within a dwelling, a railroad or a Pullman car.

The experiments that have been made with the greatest care in the laboratories of the Board, and of which a report will be presented in full detail by Dr. Fernando Lopez, a member of the same Board, have shown us that the combustion of sulphur in certain proportions, infalibly produces death to the mosquito; but it has also introduced into technique of the disinfection, an infalible method for ascertaining whether this operation has really been effective: This infalible method consists in always placing some mosquitos as "witnesses" in the same place in which the disinfection is to be made, at some point where they might be least exposed to the action of the sulphurous vapors. If under these unfavorable conditions, it is found on completing the disinfection, that the mosquitos which have served as "witnesses" have died, there can be no question that all which may have existed in the same room, under more favorable conditions for receiving the sulphurous acid, must also have died.

In a great number of towns and villages of the Republic, and precisely in those where the Yellow Fever spread, the dwelling houses of the poor people, are mere huts that are constructed out of materials which furnish an easy entrance and outlet to the mosquitos and the greater part of them have roofs made of grass or dry branches of some kind. It appeared impossible to disinfect these huts (called in our country "jacales"), but a series of continuous and persevering experiments led Dr. Narciso del Rio to a satisfactory solution of the problem. I must here detain you for a moment whilst I explain the difficulty of finding an effective method.

Experience has taught us that when an apparatus is placed inside of a dwelling for the purpose of burning sulphur, as soon as it begins to throw off the sulphurous acid.

the mosquitos try to find an outlet and direct their flight to any aperture through which light penetrates even though it may be only the lock of a door, and in this way they leave the room or house without having come under the action of the gases that ought to kill them. As the huts I have referred to, inevitably present a great number of openings, the infected mosquitos escape and are thus free to proceed to other parts and to transmit the infection to non-immunes. Dr. del Rio decided to cover these huts so completely that no mosquito could escape and for that purpose he had strips made of a coarse cotton cloth with which he covers the sides of the hut. These strips reach up to the eaves and as the roof slopes and projects over the wall, the strip of cloth follows the shape of the under face of the roof, is prolonged over the upper face up to the ridge and down the other side where it again follows the shape of the eaves and continues down the wall, till it is pegged down to the ground. Over the strip already laid and forming a continuation of the same, another strip is stretched, and so on successively until the entire hut is covered. In order to completely cover the front and back of the hut, the cloth is sewed in such a manner as to adhere closely to the first strip laid and thus the hut becomes perfectly well closed as if built of lumber or stone.

As this description may not give you a very exact idea of the method of proceeding, I present two models of huts showing the way in which they are covered.

This proceeding may appear very complicated and capable of substitution by means of a ready prepared cover which would be placed over the hut and cover it entirely. Well, this proceeding was not found very effective, because between the walls and roof on the one side, and the cover on the other, there was a sufficient space left, within which the mosquitos could find a refuge and place themselves beyond the reach of the sulphurous vapors.

If therefore, we have means of converting all kinds of dwellings in which mosquitos might exist into hermetically closed rooms, we have all the necessary elements to carry out a perfect and efficient disinfection in any town and in any kind of dwelling. We have therefore resolved the third problem propounded, that of separating the three elements that lend themselves to the propagation of Yellow Fever.

But I do not wish to pass over another method which has been practiced in Havana and which we have been utilizing for the last year and a half, and which consists in diminishing the number of mosquitos existing in any given locality.

Natural history teaches us that the "stegomyia" mosquitos deposit their eggs in clean water tanks or cisterns, naturally preferring those of the dwellings in which they themselves live, and that if they do not find any such cisterns there, they issue to look for water in the ponds that may accidentally be formed through the rains in the public highways, in the hollows that may be formed by the hoofs of the animals, in the tanks, swamps etc. In order to obtain the disappearance of these last, canalization is preferable, but if this cannot for some reason be carried out, it becomes necessary to have recourse to the spreading of a thin layer of petroleum on the surface of the water, for the double purpose of preventing the larvae of the mosquitos from coming to the surface to breathe the air, and of killing them by suffocation as well as by the toxic effect of the oil. This method has been every where accepted and we continue to make use of it.

Having set forth the doctrine which has served as a basis for the adoption of the measures that are best adapted for preventing the spread of Yellow Fever, I will now proceed to describe the methods that we have adopted in our service, in order to give practical effect to the theory.

Our sanitary organization is different to the United States. In Mexico we have "the Supreme Board of Health", a Federal body, whose action is not only exercised in the Federal District, but in all the ports and frontiers of the republic in such manner that it can take action in all those places and there establish a service that depends on the central administration. The Supreme Board of Health studies the problems, discusses the methods for resolving them, forms a plan of action on which it consults the Federal Executive, and once it is approved by the latter through the Department of the Interior, it is carried into practice by placing it in the hands of the respective committee of the Board, so that the execution of such plan is always kept in the hands and under the inspection of the Board itself, with a general vigilance and oversight of the Department of the Interior.

But as this action, however extensive it may be, does not go beyond the ports and frontier towns, without possessing jurisdiction in the different States which are independent and sovereign as in the American Union, the Federal entities which were interested in giving uniformity to the efforts against Yellow Fever, requested the Federal Executive to confide the direction of the campaign within their own territories, to the Supreme Board of Health. This procedure was adopted by the States of Tamaulipas, Nuevo Leon, San Luis Potosí, Vera Cruz, Chiapas, Oaxaca, Tabasco, Campeche and Yucatan, that is to day, all those that are situated on the coast of the Gulf of Mexico and on part of the northern frontier with the United States. With this support, the Federal Executive has found that it held in its hand the possibility of enforcing prompt and efficient action through the Federal Sanitary authorities in all those places that had been invaded by Yellow Fever during the past year.

In order to render the campaign practicable, the

Chamber of Deputies last year appropriated a sum of \$100,000.00, in June of the present year, a further sum of \$40,000.00 and in the month of November last another of \$70,000.00, making a total of \$210,000.00. The interested States on their side contributed a sum of \$17,000.0 and the States of Vera Cruz and Yucatan have contributed the half of the expenses incurred in the campaign against Yellow Fever.

The Supreme Board of Health finding itself thus supported with sufficient authority and the necessary resources, it proceeded to form an expeditionary brigade composed of a physician who was well versed in the doctrine of the transmission of Yellow Fever and in the methods which the American Government had adopted in the Island of Cuba, (methods that permitted the final extermination in that territory), and with a staff of Sanitary Agents who had been instructed in Vera Cruz in the different operations of house to house visits, isolation of the sick, disinfection of dwellings, and destruction of larvæ. This brigade travelled from town to town of those had been invaded by Yellow Fever and in each one established the Sanitary Service, training a staff that should in each locality continue the work in the same manner as in Vera Cruz, and follow up the campaign against Yellow Fever.

As all the services so organized remained under the direct control of the Supreme Board of Health in Mexico, this body was able to receive daily reports by telegraph of every case of the disease that was confirmed or that was suspected, and that was discovered in any locality, and it could also immediately send orders by wire, for the steps to be taken to counteract the evil where ever it was found.

This is the method that has been followed and that will be continued until we obtain the total disappearance of the Yellow Fever.

The amount of work executed during the present year, is shown on the diagram that I have the honor to lay before the members of this Association.

But the summary of the results obtained, can be concentrated in the following few words:

Yellow Fever has been permanently stamped out in Nuevo Laredo, Lampasos, Monclova, Monterrey, Linares, Ciudad Victoria, Tancanhuitz, Ozuluama, Tantoyuca, Huejutla, and Tampico, and the reproduction of the disease has been rendered impossible in those places, because care is taken to disinfect the vessels which arrive in Tampico from those places where sporadic cases of the disease are still observed. In Vera Cruz the epidemic disappeared some months ago and there are only sporadic cases found from time to time which are at once carefully attended to.

In Progreso the disease no longer exists.

In Mérida there are only a few sporadic cases found, but in the last mentioned tree towns the sanitary labors are continued with the same activity as when the full epidemic prevailed.

We may therefore state that Yellow Fever has been now reduced to certain towns on the Isthmus of Tehuantepec which have railroad connection, and as the attention of the sanitary authorities is now concentrated on those points, it is hoped that the disease will entirely disappear from them before the ensuing summer.

Together with this paper I present the documents that support and explain my observations, together with full details of the campaign that in Mexico has been undertaken against Yellow Fever.

MEMORIA

PRESENTADA Á LA ASOCIACIÓN AMERICANA DE SALUBRIDAD
PÚBLICA EN EL MEETING CELEBRADO EN LA HABANA,
CUBA, DEL 9 AL 13 DE ENERO DE 1905, POR EL DR.
EDUARDO LICEAGA, PRESIDENTE DEL CONSEJO
S. DE SALUBRIDAD DE MÉXICO.

Desde el año de 1903 me he impuesto la obligación de dar cuenta á esta Asociación del curso que ha seguido la fiebre amarilla en la República Mexicana, en cada uno de los años transcurridos desde entonces. Me propongo ahora dar cuenta de la epidemia que hubo el año pasado y de los casos que se han presentado en el actual, en diversos lugares del Istmo de Tehuantepec, en Mérida y en Veracruz, y después hacer una relación suscita de las medidas que se tomaron en el año pasado para extinguir la epidemia y las que desde entonces se están llevando á cabo para extirpar definitivamente esta enfermedad de nuestro territorio.

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I

Para cumplir con mi primer propósito, tengo el honor de presentar los cuadros gráficos que representan la morbilidad y la mortalidad por fiebre amarilla en los diversos puntos que alcanzó la epidemia en el año pasado. Debo anticipar desde luego que esos cuadros no pueden representar el número exacto de casos de la enfermedad, porque en esa epidemia, como en la de cualquier otra enfermedad, los primeros casos pasan desapercibidos. En cuanto á la mortalidad, es más probable que los cuadros representen la verdad, porque no se hacen inhumaciones sin permiso del Juzgado Civil de cada localidad, y aun cuando algunos de los casos de defunción sean ocultados por ignorancia ó por malicia, su número es muy reducido y puede despreciarse en el conjunto.

Otro cuadro representa también la morbilidad y mortalidad por fiebre amarilla hasta el 30 de Noviembre último. Como comentario al primero, debo indicar que ha sido un acontecimiento enteramente excepcional, que la enfermedad se haya extendido lejos del litoral en donde está el foco primitivo y principal de la endemia, pero en esta ocasión siguió el camino por Tampico á Victoria, á Linares, á Monterrey, á Nuevo Laredo (Tamaulipas) y hasta Laredo, Texas, haciendo incursiones muy limitadas á Lampasos y á Monclova, fuera de la línea troncal que he señalado, y además, á todos los pequeños pueblos que están en las inmediaciones de las anteriores ciudades. De los otros focos, el de Veracruz y el de Mérida, la enfermedad se propagó á Coatzacoalcos, un pueblo pequeño que se llama Jáltipam, á Tehuantepec y á salina Cruz.

Desde el fin del año pasado desapareció completamente en Laredo (Tamaulipas) y todas las poblaciones antes mencionadas, al Norte de la República. La epidemia de Veracruz desapareció también y solo se han presentado casos esporádicos en la Fortaleza de Ulúa, que está frente

á la población misma. En Mérida no existe epidemia sino también casos esporádicos más ó menos frecuentes, y lo mismo ha pasado en las poblaciones del Istmo de Tehuantepec, si se exceptúa la aldea de Texistepec, en donde se presentó una epidemia que está ya en declinación.

Con lo expuesto creo haber cumplido el compromiso que voluntariamente he contraído de venir á declarar de lante de esta Asamblea el estado que guarda la fiebre amarilla en la República Mexicana.

II.

Quisiera poder presentar una relación detallada de los esfuerzos que se están haciendo en la República Mexicana desde 1902 para combatir la fiebre amarilla y procurar la desaparición completa de esta enfermedad, pero este estudio prolongaría mi relación y prefiero decir lo que se hizo el año pasado para impedir el progreso de la epidemia y las medidas que se han tomado desde entonces y se continúan tomando ahora para hacer desaparecer definitivamente la fiebre amarilla de nuestro territorio.

La Doctrina de la trasmisión de la fiebre amarilla por intermedio del mosquito, no es perfectamente conocida porque en esta misma Asociación la presentó por primera vez el Doctor Reed, el inmortal autor del procedimiento científico destinado á demostrarla por medio de experimentos que quedarán memorables en la historia de la ciencia; pero me veo obligado á recordar los puntos capitales de esa doctrina, porque ellos han servido á las autoridades sanitarias de México para establecer la campaña contra la fiebre amarilla.

Para que pueda existir la fiebre amarilla, se necesita el conjunto de estas tres circunstancias:

1º Que exista enfermo de fiebre amarilla:

2º Que exista mosquito del género "stegomya" que pique al enfermo de fiebre amarilla, y

3º Que haya persona no inmune que pueda ser picada por mosquito infectado, á quien se inocule la enfermedad.

El problema para hacer la profilaxis de la enfermedad, queda reducido á dissociar estos tres factores. En efecto, si no existe enfermo de fiebre amarilla los mosquitos no pueden ser infectados; si no existen mosquitos infectados no puede hacerse la transmisión y si no existen personas no inmunes, no hay á quien transmitir la enfermedad.

Como hasta el momento actual no hay ninguna vacuna preventiva de la fiebre amarilla, no podemos transformar en inmunes á los que no lo son por no haber sufrido ataques anteriores de la enfermedad. De modo que este factor, en práctica, no lo podemos eliminar; pero sí está en nuestra posibilidad conocerlo y voy á exponer la manera como procedemos en México para llegar á este resultado: en cada población de las que han sido visitadas por la fiebre amarilla, se hace un padrón muy exacto de todas las personas no-inmunes, anotando el nombre, sexo, edad, lugar de procedencia, tiempo que lleva en la localidad infectada ó que puede serlo, y señas exactas de su domicilio. Teniendo estos datos hemos establecido para cada localidad un personal que se ocupa en hacer día á día la visita domiciliaria. Cuando uno de los Agentes sanitarios descubre que una persona no-inmune tiene elevación de temperatura no trata de averiguar el origen de la fiebre, sino que aísla inmediatamente á esa persona. En ese aislamiento se le conserva si la observación llega á demostrar que se trata de la fiebre amarilla, pero si es cualquiera otra enfermedad febril, se le deja en libertad.

Quedan pues, los otros dos factores: enfermo de fie-

bre amarilla y mosquito del género "stegomya" que pueda transmitir la enfermedad.

El enfermo de fiebre amarilla no puede transmitir su enfermedad por el aliento, ni por las excreciones de su cuerpo ni por el aliento, ni por las excreciones de su cuerpo, ni por los vestidos que haya manchado, ni por el aire que lo rodea: solo es peligroso en el caso de que pueda ser picado por un mosquito "stegomya;" luego el modo de aislarlo consiste únicamente en impedir que lleguen hasta él los mosquitos que puedan picarle. Este aislamiento se hace colocándolo en un cuarto en donde las ventanas estén provistas de malla alambre bastante tupida para que no permita que á través de ella pueda pasar algún mosquito, y que la puerta de entrada al aposento sea doble y compuesta de dos bastidores provistos también de malla de alambre, separados también de malla de alambre separados tambien por un intervalo de un metro y dispuestos de tal modo que cuando se abra la puerta exterior se cierre necesariamente la interior y que para abrir ésta última, queda forzosamente cerrada la exterior. Esto se consigue por medio de una cadena de determinada longitud que liga las dos puertas. El cuarto protegido de esta manera es el que realiza el ideal del aislamiento de un enfermo de fiebre amarilla.

La visita domiciliaria de que antes hablé, ha permitido descubrir desde el primer día al enfermo sospechoso de tener la fiebre amarilla. El Agente que descubre á un enfermo, lo conduce inmediatamente al Hospital Civil, si es una persona pobre, al Hospital Militar, si pertenece al Ejército y á una "Casa de Salud" especial, si es persona acomodada que puede pagar su asistencia.

Queda, pues, resuelto el segundo problema: el del aislamiento del enfermo de fiebre amarilla.

Vamos ahora á estudiar el tercero. Mientras se hizo el descubrimiento del enfermo, pudo ser picado por un

mosquito género "Stegomya," pero como la observación ha enseñado que estos mosquitos siguen habitando la casa en donde picaron al enfermo, bastará destruirlos dentro de esa casa para asegurarse de que no irán á picar á una persona no inmune. La experimentación nos ha enseñado el modo particular de proceder para destruir los mosquitos dentro de una habitación, en un coche de ferrocarril ó en un carro Pullman.

Los experimentos que se han seguido con mucho rigor en los Laboratorios del Consejo, y de que os dará cuenta con mucho detalle el doctor Fernando López, Vocal del mismo consejo, han enseñado que la combustión del azufre en determinadas proporciones produce *seguramente* la muerte de los mosquitos, pero sobre todo, ha introducido en la técnica de la desinfección un modo infalible para descubrir que esta operación ha sido eficaz. Este modo infalible es el de poner siempre mosquitos "testigos" en el mismo local donde se hace la desinfección y en el sitio menos apropiado para que les alcance la acción de los vapores sulfurosos. Si en estas condiciones desfavorables, al terminar la desinfección se encuentra que los mosquitos que han servido de "testigos" han muerto, es indudable que todos los que hubieran existido en la misma habitación, en condiciones más favorables para recibir la acción del ácido sulfuroso, deben haber muerto también.

En un gran número de poblaciones de la República y justamente aquéllas donde se ha desarrollado la fiebre amarilla, las habitaciones de los pobres son chozas construidas con materiales que permiten la entrada y salida fácil de los mosquitos; la mayor parte de ellas tienen sus techos formados por zacate ó ramas secas de otros vegetales. Parecía imposible poder hacer la desinfección de estas chozas—(que entre nosotros se llaman "jacales")—pero una serie de continuados y perseverantes experimentos permitieron al doctor D. Narciso del Río resolver sa-

tisfactoriamente el problema. Quiero detenerme un momento en explicar la dificultad de llegar á un procedimiento eficaz.

La experiencia ha enseñado que cuando se pone en el interior de una habitación un aparato para hacer la combustión del azufre, luego que se hace el desprendimiento del ácido sulfuroso los mosquitos huyen buscando la salida y se dirigen á cualquiera abertura por donde penetra la luz, aun cuando esta sea la ceradura de una puerta y se salen de la habitación sin haber sido alcanzados por los gases que los debían matar. Como las chozas de que acabo de hablar inevitablemente tenía un gran número de aberturas, los mosquitos infectados se escapaban y podían ir á otras partes á infectar á los no-inmunes. El Doctor del Rio discurrió forrar estas chozas tan completamente, que ningún mosquito pudiera escaparse y procedió de esta manera: hizo construir tiras de un género que se llama manta, con los cuales cubre la pared lateral de la choza; estas tiras llegan hasta la parte donde comienza el techo; como este es inclinado y sobresale del muro, la tira de género sigue el contorno de la cara inferior del techo, se prolonga en toda la cara superior, llega al vértice, baja del otro lado, da vuelta al rededor de la parte saliente y vuelve á aplicarse en el muro del otro lado hasta la parte inferior en donde se le fija al suelo por medio de clavos. Encima de la tira ya colocada é imbricada sobre ella, se coloca otra en la misma disposición y así sucesivamente hasta cubrir toda la choza. Para cubrir completamente las carras anterior y posterior de esa choza, se cose el género de manera que se adhiera perfectamente á la primera de las fajas que se colocó y se convierte la habitación en una tan perfectamente cerrada, como si fuera de madera ó de piedra.

Como esta descripción pudiera no dar idea exacta del procedimiento, presento á usted dos modelos de chozas y la manera como se deben cubrir.

Este procedimiento pudiera aparecer como muy complicado y susceptible de substituirse por una funda, ya hecha, que se colocara encima de la çhoza cubriéndola por completo. Pues bien, este procedimiento no fué eficaz, porque entre los muros y el teçho, por un lado, y la funda por el otro, quedaba un espacio suficientemente para que se albergaran los mosquitos y no fueran alcanzados por el ácido sulfuroso.

Si, pues, tenemos medios de convertir en cerradas herméticamente todo género de habitaciones en donde puedan existir mosquitos, tenemos los elementos suficientes para hacer en cualquiera población y en cualquiera clase de habitación una de sinfección perfecta y eficaz. Está, pues, resuelto el tercero de los problemas que nos habíamos planteado: el de disociar los tres elementos que son capaces de permitir la propagación de la fiebre amarilla.

Pero no quiero dejar de hablar de otro que se ha puesto en práctica en la Habana y que nosotros estamos utilizando desde hace un año y medio, y que consiste en disminuir el número de mosquitos existentes en una localidad dada.

Fundándose en los conocimientos de Historia Natural, se sabe que los mosquitos del género "Stegomya" ponen sus huevos en los depósitos de agua limpia, naturalmente de preferencia en los de las habitaciones donde ellos viven, pero que si no encuentran allí esos depósitos, los van á buscar fuera en los charcos que las lluvias forman accidentalmente en las calles y plazas; en las oquedades que las pisadas de los animales hacen en el suelo, en los estanques, en los pantanos, etc. Para hacer desaparecer estos últimos, se emplea de preferencia la canalización, pero si por cualquiera circunstancia ésta no puede ejecutarse, entonces se recurre á la aplicación del petróleo que extendido en capa delgada sobre la superficie del

líquido, tiene el doble efecto de impedir que las larvas de los mosquitos salgan á respirar el aire atmosférico y las haga morir por asfixia, además del efecto tóxico sobre ellas. Este procedimiento está aceptado en todas partes y nosotros lo seguimos utilizando.

Expuesta la doctrina que ha servido de base á la adopción de las medidas más apropiadas para combatir la propagación de la fiebre amarilla, voy á indicar ahora la organización que hemos dado á nuestros servicios para llevar la concepción teórica á la práctica.

Nuestra organización sanitaria es diferente á la de los Estados Unidos. En México tenemos el "Consejo Superior de Salubridad, que es un cuerpo Federal cuya acción no solamente se ejerce en el Distrito que lleva este nombre, sino en todos los puertos y fronteras de la República, de modo que esa acción puede extenderse á todos esos lugares y en todos ellos establecer un servicio que dependa de la Federación. El Consejo Superior de Salubridad estudia los problemas, discute la manera de resolverlos, formula un plan de ejecución que consulta al Ejecutivo Federal y una vez aceptado por éste, por intermedio de su Secretaría de Estado y del Despacho de Gobernación, lo hace efectivo poniendo en manos de la Comisión respectiva del Consejo la acción, de manera que la ejecución queda confiada á unas solas manos, siempre bajo la inspección del Consejo y bajo la suprema vigilancia de la secretaría de Gobernación.

Mas como esta acción, por extensa que sea, no alcanza más que á los puertos y ciudades fronterizas, pero no puede tener intervención en los diversos Estados que son independientes entre sí como en la Unión Americana, las Entidades Federativas que estaban interesadas en dar unidad á la acción para combatir la fiebre amarilla pidieron al Ejecutivo Federal que él confiara la dirección de esa misma campaña, en sus propios territorios, al Consejo

Superior de Salubridad. De esta manera han procedido los Estados de Tamaulipas, Nuevo León, San Luis Potosí, Veracruz, Chiapas, Oaxaca, Tabasco, Campeche y Yucatán, es decir, los que comprenden todo el litoral del Golfo de México y una parte de la frontera Norte con los Estados Unidos. Contando con este acuerdo, ha resultado que el Ejecutivo Federal tiene en sus manos la posibilidad de hacer de una manera pronta y eficaz la intervención de las autoridades sanitarias federales en todos los lugares que fueron invadidos por la fiebre amarilla durante el año próximo pasado;

Para hacer realizable la campaña, la Cámara de Diputados votó en el año anterior un crédito de \$100,000.00 cs. en Junio del actual otro de \$40,000.-00 cs. y en el mes de Noviembre último, otro de \$70,000.-00 cs.; en suma, la cantidad de \$210,000.-cs. Por su parte, los Estados interesados han contribuido con la suma de \$17,000.-00 y los de Veracruz y Yucatán con la mitad de los gastos que se eroguen por cuenta de la campaña contra la fiebre amarilla.

Armado así el Consejo Superior de Salubridad con la autoridad suficiente y con los recursos indispensables procedió á formar una Brigada expedicionaria compuesta de un médico muy instruido en la doctrina de la transmisión de la fiebre amarilla y de los procedimientos que el Gobierno americano había implantado en la Isla de Cuba, —(procedimientos que le permitieron desterrarla definitivamente de ese territorio)—y de un personal de agentes sanitarios que habían aprendido en Veracruz á ejecutar las diversas operaciones de visitas domiciliarias, aislamiento de enfermos, desinfección de habitaciones y destrucción de las larvas. Esta brigada, digo, fué á establecer, pueblo por pueblo, de los invadidos por la fiebre amarilla, los servicios sanitarios en cada uno de ellos, adiestrando á un personal que debería continuar en cada loca-