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Vol. X.

SEPTEMBER 1941.

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A MONTHLY JOURNAL OF PRACTICAL MEDICINE & SURGERY

Editor: Dr. P. R. Venkappaya.

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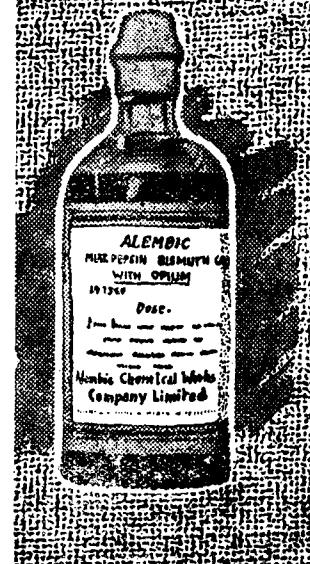
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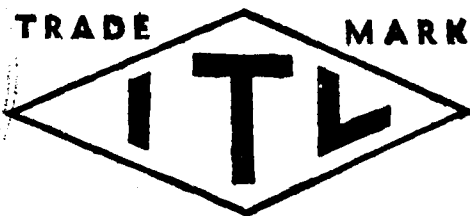
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CONGENITAL SYPHILIS *

BY DR. N. PADMANABHA RAO, GUNTUR.

In dealing with the subject of Congenital Syphilis, it will be begun with mentioning a few points of importance in reference to pregnancy in particular. Congenital syphilis is a preventable disease which can be completely eradicated - fortunately the blood Wasserman test is here of the highest value and it is only by its routine application in all pregnant cases that syphilis can be recognised amongst them. In fact that congenital syphilis can be prevented in the child by intelligent antisyphilitic treatment in the mother during pregnancy.

Syphilis is a much milder disease in women than in men. This is at least in part due to the modifying effect of pregnancy upon the lesions of syphilis. If a woman is infected shortly before, at the time of, or shortly after conception, the lesions of early syphilis, the chancre and outbreak of secondary stage are usually suppressed completely. If present they are much milder than in the case of average man or non-pregnant woman. But the effect of the infection on the pregnant women is generally to make them suffer from abortions, miscarriages, still births and infants born with congenital syphilis.

An infected mother can transmit syphilis to her offspring long after she has ceased to be sexually contagious-syphilis transmitted to the foetus during the early months or years of her infection is invariably fatal and abortion or miscarriage is the result. In successive pregnancies the virulence of the disease seems to become more and more mitigated, so that infants born dead at term are succeeded by those dying shortly after birth, and later by those surviving, though diseased and lastly by healthy children. This regular course of gradual attenuation is not the rule. It has happened, in the case of twins, that one is healthy and the other diseased. Though the disease is not inherited yet the foetus is

*Paper read at the meeting of the Guntur District Medical Association on 19-7-41.

infected through the placenta. It is entirely a question of intra-uterine infection. The mother may be apparently quite healthy but the Wasserman test may be positive. So also a child showing no signs of infection, but born of a woman suffering from syphilis may with impunity be fed by its mother's milk. Colle's law is the paternal transmission of infection to the foetus without mother being affected. Such a thing probably does not exist. The ovum getting infected through organism accompanying spermatozoa is doubtful. The foetus is commonly infected during the second half of pregnancy. If a woman has a syphilitic baby, it is because she has syphilis. Doubtlessly the foetus is infected through the placenta only. The intra-uterine conditions leading to death of the foetus do not concern us here. If the embryo is dead in early months of pregnancy—3rd month-abortion and in the later months—7th month—miscarriage and premature labour and so on.

If a child is infected in utero and is born alive, it may show definite signs of syphilis at birth or it may appear healthy at first and develop lesions several weeks later, or appear healthy at birth and during infancy, developing lesions for the first time during childhood, and adolescence or even early adult life. The catalogue of manifestations of the disease as given in the books, is not stated here. They are precisely those of acquired syphilis except that there is no chancre. Skin rashes, mucous lesions, alopecia, eye lesions and so on are all found isolatedly or collectively. The child is ill and fretful. It loses weight rapidly. Certain manifestations which are common are 1. nasal catarrh, rhinitis, impending respiration. This is called Snuffles. The disease may extend to Eustachian tubes leading to deafness. 2. Fissures about the lips and corners of the mouth, about the genitals and anus which are called Rhagades are very characteristic. The secretions from the mouth are very virulent and infective. 3. Bullous skin eruptions and papular eruptions on palms and soles are present. 4. Epiphysitis and enlargement of spleen and liver and other visceral lesions are common in early congenital syphilis. Pneumonia alba is a frequent cause of death and a syphilitic infant often dies of toxæmia. It displays what is called a congenital inaptitude for life and gradually wastes away from inanition. Anaemia and cachexia are present. A rapidly fatal type of jaundice results which is due to anti-natal syphilitic hepatitis. Acute yellow atrophy and infantile cirrhosis are all of similar category. The liver receives maternal blood directly by the umbilical vein and thus born more frequently attacked than other organs in the body.

Various congenital deformities, dystrophies are the results of action of syphilitic poison upon the organism during the formative period or development. Malformations, various deformities as cleft palate, imperforate anus and monstrosities may also be attributed

to this factor. If a child is born alive with definite signs of syphilis, it is called Neonatal syphilis. If later during infancy, it is called Infantile syphilis. A wasting child may be born at full term and may not show any signs of the disease. This may be due to the mildness of the infection, or the fact that the child possesses some immunity which has protected it and such protection by immunity may be only temporary. It is probably this way that one can explain the late appearance of syphilitic manifestation later in the life of a child. It is a safe rule to consider syphilis in any abnormality in a child and in undetermined cases, no symptoms appear during early infancy and the child develops normally for several years. There are three periods of life at which trouble is likely to appear, out of an apparently healthy body. The early period from 4 to 7 years, the period of puberty and lastly the period of late adolescence or early adult life are the 3 periods of life. The lesions developing at these times may be any of those observed in acquired syphilis usually of gummatous type. The active lesion most to be feared is interstitial keratitis which may lead to partial or complete blindness. The inflammation of the cornea, is always ultimately bilateral, even though one eye may be affected much later than the other and unlike most other acute inflammatory lesions, of congenital or acquired syphilis, it responds slowly to treatment. Involvement of 8th-acoustic-nerve, usually of sudden onset with partial or complete destruction of either cochlear or vestibular branches of both and resulting in serious and irreparable deafness is next in frequency. Active bone lesions, periostitis and osteomyelitis are common and in younger children those are often mistaken for tuberculosis. Arthritis may occur particularly as the painless symmetrical hydrarthrosis of the knees; known as Cluttons joints.

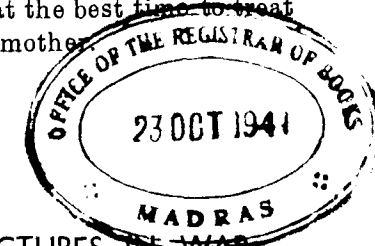
The stigmata of congenital syphilis which readily permit diagnosis are 1. Undue prominence of frontal or parietal bones. 2. Interstitial Keratitis with pepper and salt choroiditis present in the peripheral fundus. 3. Eighth nerve deafness 4. Unduly high or pointed palatal vault in place of a flat arch of the normal palate 5. Saddle nose. 6. Abnormalities in dentition, especially the so called Hutchinson teeth. This is thought to be pathognomonic of congenital syphilis. Hutchinsons triad which is an absolute diagnostic of congenital syphilis, consists of interstitial keratitis, deafness, and pegging of incisor teeth. In late congenital syphilis two visceral lesions occur, particularly of the liver and spleen, sometimes producing a typical Bant's syndrome, but as contrasted with acquired syphilis, cardiovascular involvement is relatively infrequent. Involvement of central nervous system is as common as it is in acquired kind. It is probably a frequent cause of early death. All the forms of acquired neuro syphilis may be found in the victims of the congenital syphilis. Juvenile paresis, tabes, spastic paraplegia, epilepsy, optic atrophy etc. and even mental defects.

The Ductless Glands, Spleen, suprarenal, thyroid, and thymus undergo morbid changes. Spleen is enlarged in large percentage 62 per cent. of cases. This is of confirmatory value in the diagnosis. Metabolism is affected in a serious manner. Marasmus is a characteristic feature of congenital syphilis. It is of a very intractable nature. The wasting persists in spite of antisiphilitic treatment and vitamin substitution by good feeding etc. The gastro-intestinal tract, is therefore not at fault and does not account for the marasmus. The patient either dies of exhaustion or if it lives, its growth is stunted-syphilitic infantilism. The differential diagnosis is chiefly between congenital affection and mal-nutrition due to vitamin deficiency which are quite common and the difficulty arises when all the three are existing. Of course the Wasserman test clinches the diagnosis. The prognosis in congenital syphilis is much worse than in the acquired form in as much as massive intravenous arsenicals administration is not possible in children as in adults.

Prophylaxis: At the beginning, it was mentioned about prophylaxis i.e. the treatment of infected mothers. The prevention of transmission to offspring is primarily a matter of preventing infection of mothers. A man who contracted syphilis should not marry until after the Wassermann test is negative. It is said that 5 years is the period that one should wait before marriage. Of course the period may be shortened by prolonged treatment. By that time the risk of transmission through sexual intercourse is usually gone. Efficient treatment of the mother commenced in the first half of the pregnancy will usually prevent the disease from being transmitted.

Treatment: It is just the same as that for acquired syphilis. Arsenicals, mercury, Bismuth and iodides form the group. The difficult problem in the congenital syphilis when young children are to be treated. Arsenicals cannot be given by intravenous route. Milder preparations of arsenic in smaller dose which could be given intramuscularly, such as Acetylarsan, Marphaside, Sulphostab etc. are to be given. Long continued use of arsenical preparations orally as spirocid and stovarsal tablets and mercury ointment by injunction are good. Gray powder by mouth for a long time, as some doctors think that extremely small quantities of mercury and that it is too constant presence of the drug in the tissues than the amount which is efficacious. Injection of Mercury is out of question. Bismuth-mercury, of course may be given intramuscularly—caution is always necessary, as heavy metals damage kidneys. Coming to Iodides, Iodine acts on mono-nuclear leucocytes and helps absorption of newly formed connective tissue which is the result of syphilitic inflammation. Some author says that mercury cures and Iodine relieves. Unfortunately iodides cannot be administered to children in sufficient doses, as they are deleterious to kidneys.

It cannot be too frequently repeated that congenital syphilis is as preventable a disease as small-pox and that the best time to treat it is before the child is born by treating the mother.



TREATMENT OF COMPOUND FRACTURES IN WAR

BY LEO ELOESSER, M.D.

It was evident to surgeons who took part in the late civil war in Spain that modern warfare was to differ greatly from previous wars, and that the difference would be due to advances in the mechanics of transportation and especially to extensive use of aviation. It was apparent that surgeons had much to learn and to unlearn in matters of organization, in evacuation of wounded and also in the treatment of war injuries. Especially noticeable was distrust in chemical antisepsis. Irrigations, Dakin's tubes and the complicated ritual of antisepsis that ornamented military hospitals in 1918 were unused or forgotten. Their place was taken by extensive incisions and plaster of Paris splints. Rapid military movements and the need, after the bombing of thickly populated centres, of attending great masses of wounded called more than ever for surgical methods that were rapid and safe and that permitted of prompt evacuation with a minimum of postoperative attention. Trueta has written of these methods in his monograph on the Treatment of War Wounds and Fractures. The interest his manual has aroused is evidence of our concern for military preparedness.

For this reason a few further notes based on experiences gathered during the Spanish Civil War may not be amiss.

Rapidly moving warfare dominated by aviation makes simple surgical methods imperative. The necessity of concealing formations from view from the air, and of moving men, wounded and supplies quickly, often under the cover of night, compels economy of materials, space and effort. Supplies and essentials are liable to be scanty or wanting entirely, either because they cannot be brought up or because they have been destroyed. Water, especially hot water, is liable to be short; liquid solutions and glass containers are liable to be spilled or broken. However, one learns to adapt oneself, and as the late Dr. Bethune wrote from China, "I find I can get along and operate as well in a dirty Buddhist temple . . . as in a modern operating room with a thousand accessories." The necessary economy and simplicity may by foresight and preparedness work rather to the advantage than to the disadvantage of the wounded.

PREPARATION.

The most satisfactory easily transportable and easily procurable skin disinfectant, both for the surgeon and for the patient, is chlorinated lime.

The surgeon cleans his hands with a cream of chlorinated lime and soda worked well into the skin with a brush. If running hot water is scarce this paste is washed off by having a tiny stream of water trickle on the hands from an irrigator or a can with a spigot. Cleansing is as thorough as though a much larger stream were used. Following disinfection with lime and soda, alcohol, iodine-alcohol or a mercurial in alcohol acetone solution makes it easier to dry the hands and to put on gloves, but is not essential.

The patient is thoroughly shaved, either wet or dry, the hair being removed over the whole area, which is subsequently to be encased in plaster. One applies a thick paste of chlorinated lime and soda to the skin of the operative field and removes the paste with moist gauze, working outward from the wound as a centre. This really cleans the skin of sweat, mud, dirt and grease; it may then be painted with one of the usual alcoholic antiseptic solutions, iodine or a mercurial.

Draperies should be small, so that the surgeon can keep the field under his eye and watch what unskilled assistance is doing. Large expenses of white sheeting are no guaranty of asepsis but are rather in the way. Four drapes about a yard square clipped or sutured to the skin are enough. The skin edges are further protected by large moist gauze squares. A well constructed metal sacral rest is indispensable; improvisation of boxes and enamel basins is most unsatisfactory, but a fracture table is not essential. Two pairs of small pulleys in the form of a block and tackle arranged overhead with other pulleys fastened to the wall at the foot of the table are just as serviceable and much easier to transport than a heavy fracture table. However, a fracture apparatus such as a Dupuy or Zimmer apparatus makes the placing of Kirschner or Mathews wires easier.

ANAESTHESIA.

Some form of anaesthesia is desirable in which the patient is not entirely unconscious but is able to co-operate to some extent. His co-operation makes transportation to and from the operating room easier and saves work for stretcher bearers, surgeons, orderlies and nurses. Soldiers at the front are notoriously easy to anaesthetize; they are usually in good physical condition, not overfed nor alcoholic and, when wounded, are often more or less on the verge of shock, so that a little morphine, a little sedation with barbiturates and a little inhalation anaesthesia go a long way toward freeing them of pain.

Thus preparation with morphine plus procaine hydrochloride infiltration around the site of injury is often all that is needed for the accomplishment of a thorough debridement and reduction of a compound fracture.

Plexus anaesthesia is very satisfactory for injuries of the upper extremity. Twenty c.c. of 1 per cent. procaine hydrochloride plus two drops of 1; 1,000 epinephrine are injected just above the middle of the clavicle; the needle is pointed toward the spinous process of the first dorsal vertebra. As it strikes the plexus, the man feels a sudden tingling pain in the fingers. One should inject the full amount of procaine solution as soon as this pain is felt, moving the needle about a little to inject the various cords of the plexus. Anaesthesia follows almost immediately. If the needle misses the plexus it strikes the first rib; it should be moved about until the plexus is found. If injection is made not squarely into the plexus but around it, anaesthesia may take from fifteen to twenty minutes to develop. The interval may be used to attend to other wounded.

For lesser injuries, injection around the site of injury is all that is needed.

A little ethyl chloride inhalation given when all is in readiness is sufficient for the few minutes needed to amputate a mangled arm through the site of fracture; the man wakes up immediately, may often walk to his bed, travel seated in an ambulance and can be given hot drinks without nausea and vomiting. It is especially important that deep general anaesthesia be not used for injuries of the upper extremity, for thoracobrachial plaster of Paris is easy to apply if the man is seated but difficult or impossible if he is lying unconscious on a table.

For fractures of the lower extremity, low spinal injection of 100 mg. of procaine hydrochloride dissolved in 3 c.c. of spinal fluid injected while the man is seated with one or both legs hanging over the edge of the table produces an ideal anaesthesia. The injured man retains the use of his arms and can help to balance himself on a pelvic support while plaster is being applied. Evipal or pentothal sodium injected slowly until a light narcosis is reached is satisfactory for men who are shocked or frightened. By injecting the drug slowly, drop by drop, one can maintain a constant light narcotic level. Evipal, however, is not satisfactory in skull injuries with unconsciousness and delirium. It seems to increase the delirium and makes the wounded more unruly.

Ethyl chloride administered by dropping it, not spraying it, on an open face mask is a most satisfactory anaesthetic for short manoeuvres requiring good relaxation. At the moment when the patient first goes under the anaesthetic, when he takes a few deep sighing respirations, the mask should be slightly lifted to allow room for

plenty of air. If this is done and sudden inhalation of highly concentrated ethyl chloride vapour is thus avoided, the anaesthetic is safe: there is no excitement stage and no struggling, which to wounded with fractures are harmful; relaxation is perfect, and consciousness returns without nausea or vomiting a few minutes after the anaesthetic has been stopped. No other inhalation agent seems to meet all requirements for short anaesthesia so well. Five minutes is to be regarded as the maximum duration of ethyl chloride anaesthesia; if more prolonged narcosis is likely to be needed, ethyl chloride should not be given or anaesthesia should be changed to ether. Bulky apparatus, inflammability and the need for expert anaesthetists preclude the wide use of gas in advanced hospital formations.

X-RAY EXAMINATION.

It is seldom necessary to take an X-ray film of a compound war fracture before debridement. Inspection of the limb before operation and of the fracture during operation usually give the needed information. Foreign bodies and the position of fragments are usually self-evident in the course of a proper debridement. It is seldom necessary to take an X-ray film immediately after operation and immobilization if the operation is properly done and splints are properly applied. Radiography at the front is time consuming and cumbersome, fluoroscopy still more so.

The time and place for X-ray examination is at the evacuation hospital and farther back, at a time when fractured bone ends may have slipped or osteomyelitis and sequestration may be demonstrable.

The mobile surgical unit which I headed in Spain was equipped with a good modern portable X-ray apparatus and a dark room included in a mobile unit on wheels. They were not once used. The same was true of other advanced units which I had occasion to observe.

Conceivably radiography and fluoroscopy might be advantageous for chest wounds with suspected intrapleural foreign bodies or for abdominal wounds. It is questionable, however, whether its limited application in small advanced hospital formations calculated for rapid movement and intense activity justifies the time, weight, bulk and personnel needed for its management.

POSITION ON THE OPERATING TABLE.

For injuries involving the front and sides of a limb, the wounded are placed on their back; if both front and back have to be dealt with, the limb is elevated or suspended so that the posterior surface is accessible. The man may also temporarily be placed on his side, but the fracture is likely to be considerably displaced in this position.

The arm may be placed on the operating table at the side of the wounded or laid across the chest; it may be held suspended from a pulley or abducted on an arm board or on a side table. It should be

placed in the position in which final reduction is likely to be most easily accomplished and maintained. Draperies should not be so bulky that the fracture may be displaced by their removal; they should allow access to the arm and hand so that slings and pulls may be applied for maintenance of position while the limb is being splinted. The same consideration holds good for fractures of the lower extremity. The patient lies on his back; if the posterior surface of the limb is injured it may be placed in a Bohler frame or held suspended by slings and pulleys to allow access from underneath. In any event slings are best laid under the limb before debridement is begun so the fracture may not be displaced later.

In amputation much blood can be saved and the tourniquet dispensed with if the limb which is to be amputated is suspended vertically upright from an overhead pulley by a clove-hitch passed around the ankle or the wrist. All its venous blood is returned to the circulation in this position, while with a tourniquet, however quickly and efficiently it may be applied, some venous stasis occurs while it is being tightened and the venous blood in the limb is lost.

DEBRIDEMENT.

After everything is properly prepared and in readiness and not before, operation is begun; shaving should be complete, draperies adjusted with a view to their subsequent removal, slings and traction apparatus applied or laid under the limb ready for application; for it should be remembered that after debridement the soft parts and bones are to lie in the position which they are to maintain during healing. It is distressing both to the wounded and to the surgeon to see the limb jostled and moved during the application of retention apparatus, splints and bandages often to an extent that should call for a new debridement before the plaster is finally applied. A tourniquet usually makes accurate inspection and operation easier. It should be used only if it can be rapidly and efficiently put on. It can be kept from slipping down on the limb by a towel clip through the skin or one or two sutures. A pneumatic sleeve is the best tourniquet for the arm, a wide rubber tube or an Esmarch bandage for the thigh.

Everything being in readiness, local, spinal or general anaesthesia having been induced, the skin edges are excised in the classic manner, retractors are inserted and held gently but firmly, devitalized muscle, contaminated bone chips, foreign bodies, missiles and pieces of clothing are removed. Special attention is paid to visible shreds of clothing and dirt. The position of the limb on the operating table is likely to differ greatly from that which it had when the missile struck it. Contaminated particles may be dragged up and down from a line drawn between the wound in the skin and the fracture; soft parts, muscle and fascia may have slid one over the other, occluding the tract. In order to lay all of these recesses wide

open the skin and fascia should be widely incised so that the recesses are not under tension and forcible retraction is not necessary to expose them. If forcible retraction is necessary at the time of debridement, the wound will be under tension later. Wide incisions into skin and fascia are unimportant and can be repaired perfectly; insufficient ones are very important and will determine future loss of the limb, sepsis, spreading osteomyelitis, gas gangrene and phlegmons of the soft parts. If the unimportant superficial structures of the skin and fascia are widely incised, more important deeper structures, muscle and bone, will be spared.

The wound should not be dabbed, rubbed and prodded with gauze sponges. If vessels bleed and it is necessary to use gauze in order to see them, the wound should be firmly compressed with a piece of flat gauze held in the fingers; the gauze should then be slowly rolled back until the bleeding point can be seen and caught with a haemostat. Wiping the wound with gauze makes it bleed more and wipes dirt into its crevices.

Necrotic and contaminated muscle should be excised; severed and contaminated nerve ends may be freshened and brought together with a single fine black silk suture left long and allowed to hang out of the wound if it is thought that suppuration is inevitable, or cut short if it is thought that the wound may heal. Formal accurate perineural nerve suture is rarely indicated.

Severed vessels should be caught and tied. Arterial suture is almost never possible or permissible. A compound fracture with a cold pulseless limb calls for amputation unless exceptional vigilance is possible during the first few days after injury.

Tendons lying in a contaminated area may be allowed to remain if they can be cleaned and covered by clean viable soft parts not under tension. If they are severed, their clean freshened ends may be approximated by a single suture and similarly covered. It is not possible to cover them they had better be allowed to retract into their sheaths, for if they remain exposed in a wound they will certainly slough. More of them will be saved for secondary suture later if they are allowed to retract.

Open and exposed joints should be similarly covered. If it is possible to sew clean synovia over them without tension, their function may be preserved, but in no case should they be covered by skin sutured under tension.

Entirely loose fragments of bone should be removed. Grossly contaminated bone ends from which the periosteum has been stripped should be removed with the rongeur until clean covered bone appears. Grossly contaminated periosteum should be removed.

If the bone ends hold their position without internal fixation, so much the better. If they tend to slip they may be held by a wire passed through drill holes if it is possible to drill the holes without

stripping the periosteum and traumatizing the fracture by dislocating its ends from the wound. Oftener it may be possible to grasp the bone ends and hold them approximated with a towel clip, which should be left in the wound. If its lacerations cannot be closed, the handles may be tied together with a piece of silk or twine. Only if a bone is widely exposed and will obviously sequestrate is it permissible to use metal plates, which should lie fully exposed in the surface of the wound. Their application in the depths of a wound entails needless trauma and exposure of the bone.

Whether packing should be placed about the fracture depends on the extent and duration of contamination and the completeness of debridement. More or less sequestration will almost certainly ensue if the fracture is surrounded by gauze packs. If it is possible to surround it with soft parts without tension, it may heal without suppuration.

A few sutures are permissible when it seems expedient to cover vulnerable structures—tendons, cartilage, blood vessels—which die when exposed or which it is dangerous to allow to remain so. Such sutures should be of fine 00 or 000 catgut or fine silk (if the operator is incorrigibly silky) and should not create tension. If liberating incisions cannot loosen the parts to be sutured, suture had better be withheld.

If all structures lie perfectly loose and naturally, packing may be omitted. If contamination of the fracture site is such that the wound must be left unclean, it may be better to introduce a pack of iodoform gauze or plain gauze. In any event, it seems, in the light of never experience, that it may be wise to sprinkle the wound liberally with sulphanilamide powder.

During the whole operation, which frequently it does not take as long to perform as it does to tell about, instruments should be changed or wiped and cleaned constantly with moist gauze. This applies especially to scissor blades and the teeth of tissue forceps. The gauze should be discarded each time, and no sponge or gauze should be introduced into the wound twice. Ample incision into the skin and easy exposure will make debridement, even of extensive wounds, not too time consuming.

SUTURE.

After each debridement the question arises: "Shall the wound be closed by suture?" The answer is usually like Thackeray's to the young man about to marry: Don't. If the pros and cons are weighed each time, the cons will so outweigh the pros that there will be little doubt what to do. The pros reduce themselves to the advantage of a small linear scar—a negligible advantage. Shortening of time of hospitalization scarcely comes into question, for even though the wound is left open and allowed to granulate, it will be closed or may be closed by secondary suture or skin grafting by the

time the fracture is consolidated. The contras are overwhelming, for it will rarely be possible, in spite of the promptest and most complete debridement, to assure asepsis in extensive war injuries that warrant the performance of a debridement at all. And if such wounds are closed by skin suture producing even the slightest tension, danger to life and limb is great. In the best of events, if suppuration ensues, hospitalization will be measured in terms of years instead of months. Exception may be permissible in wounds of the hand, wrist and ankle, when the danger of serious sepsis is not great, when the skin can be approximated without tension, and when valuable tendons will slough unless they are covered.

The wound is covered with small dressings of sterile gauze and the limb is immobilised for evacuation. In wounds that are likely to bleed, sterile gauze is preferable to Orr's petrolatum pack; wound covered with petrolatum, ooze and bleed much longer than when covered by sterile gauze.

APPLICATION OF PLASTER SPLINTS.

The use of plaster of Paris may justify a few generalities. In surgery, as in every other art, each material calls for its own technique, and what is valid for one medium may not be so for another.

In the United States plaster of Paris is used on crinoline or starched gauze bandages; in Spain and France plain unstarched gauze bandages are used. Crinoline plaster bandages have more body and are easier to apply without wrinkles; however, their starch content delays setting and makes it necessary to use rapidly setting plaster of high quality (alabaster or dental plaster) if the cast is to set reasonably quickly. The casts are probably not quite so hard but are tougher than the ones made with unstarched bandages. Plaster on plain unstarched gauze is somewhat more difficult to apply smoothly, especially for those used to starched bandages; however, it sets more quickly without the starch, so that slower plaster of inferior quality can still be used satisfactorily. The casts are harder but more brittle than those with starched bandages; they are likely to be a little thicker. In France and Spain flannel cut to a pattern and immersed in a plaster cream is occasionally used. This is especially useful for jackets, body casts and half body casts (plaster shells). It saves time and trouble when properly applied. For general use when good plaster is available the crinoline bandage is probably preferable; if plaster of a poorer grade, and ordinary commercial plaster such as can be bought at most lime kilns, is all that can be had, unstarched plain coarse mesh gauze bandages are better.

Plaster of Paris bandages conform to the shape of the body by being moulded to it; they have no elasticity and cannot, like gauze or flannel bandages, be pulled or stretched into shape. Their cohesiveness is great; they will not work or slip or stretch. Every

crease and every wrinkle in them becomes petrified when the plaster sets, and will cause intolerable pressure if it overlies a bony prominence. To pad plaster with absorbent cotton or some such material is to frustrate the purpose of plaster. It will immobilize imperfectly, for the limb will work up and down in its cotton sheath; it will be more and not less likely to cause pressure sores, for it is impossible to mould it accurately to the limb if it is separated from it by an uneven surface, such as that of cotton padding; and, lastly and most important, the immobilization due to the plaster sticking to the underlying skin is lost, and traction against muscle pull can be secured only to pressure of the plaster splint against flaring surfaces, such as the knee, the ankle, the dorsum of the foot, the heel and the hand below the wrist, instead of being equally distributed throughout the whole limb, as when plaster is applied directly to the skin.

It is obvious that some way of holding a limb must be devised that will keep it in position while the plaster is being put on. It is equally obvious that unless the limb will hold its position by itself, which it will not often do in fractures, its position cannot be retained by the hands of an assistant, for he must let go each time a turn of bandage or splint is to come between his hands and the patient's skin. Some form of traction is necessary which can hold its place, at least until the plaster hardens, a metal pin, a bandage or some material that can be incorporated into the splint or retain its position under it. It is obvious again that the hands of an assistant do not meet these requirements. Plaster should be applied with regard for what it can do and what is required of it, and (especially in advanced hospitals where the wounded cannot be kept under observation) with more of an eye to what the next few days, weeks and months may bring than with regard to the needs of the moment.

The limb is kept in position by suspending it or pulling on it with bandages which are greased and are incorporated into the cast, but are withdrawn before the man leaves the operating table, for they will cause pressure if allowed to remain. Or at times metal pins may be convenient. The need for these will not be great if unpadded casts are used. Traction should not be too forcible if there has been much loss of osseous substance, for a wide gap between bone ends is likely to lead to non-union. The perfect relaxation of spinal anaesthesia increase the risk of wide distraction.

Dressings should be small, just large enough to prevent plaster of Paris from leaking into the open wound; they should be held in place by a few small narrow strips of adhesive and not by a bandage encircling the limb; slings should not be too wide; as much skin as possible should be left uncovered for the plaster of Paris to adhere to. Painting the area around the wound with compound tincture of benzoin will prevent ache pustules from old wound secretions and help dressings and plaster to stick to the skin.

The plaster should be applied with due regard for the stresses and strains involving both the fracture and the neighbouring joints. Lateral strips are laid on first, a few layers at a time, two or three, not more than four. The fit of the cast depends on the neatness and accuracy of these inner layers. They are moulded with the hand to the shape of the limb. Creases and folds are removed by notching the strips or removing a V-shaped dart, so that the plaster lies perfectly smooth. A half-dozen layers or so are laid on and allowed to set a little; reinforcement are added by using shorter strips at the site of fracture or at the joints or by laying on longer strips folded lengthwise. After these longitudinal strips are hard enough to retain their shape and not buckle or dent, they are held in place by a circular bandage one layer only in thickness; no turns or folds are made in this bandage, but it is cut across and started again as soon as it ceases to run smoothly over the longitudinal strips and the limb. Care should be taken that the layers do not accumulate at the bend of the knee and the elbow. It is just here, where pressure is most likely to be harmful, that several layers of circular bandage are likely to overlap.

When additional reinforcement is thought necessary, because the man is unusually robust or heavy or because profuse drainage is likely to wet the cast at the site of fracture or because transportation is likely to be long and hard, metal material may be added, but only after the cast is dry enough to resist pressure. If metal reinforcements are added before the plaster is quite set, they will dent it and cause pressure points. Cramer splints (wire ladder splints) are particularly likely to do this. The metal, if rationally applied, need be only light and thin. Strips an inch wide cut from an ordinary tin can are just right. They can be bent and moulded by hand to fit the cast accurately. If they do this they are stronger than heavier metal, which cannot be accurately applied. They are firmly attached to the surface of the cast with a single layer of circular plaster bandage pulled tight. They are placed at the level of the fracture or over joints so that their width resists bending strain; *i.e.*, two pieces at each side of the knee, three or four pieces around a fractured femur, two pieces laterally for leg fractures. If thin aluminium sheeting is at hand this is to be preferred, being pervious to the X-rays. The cast may be made thin in certain spots so that it can break; *e.g.*, it is desirable to put a few spica turns around the hip and pelvis in high fractures of the leg, but it is not necessary to immobilize the hip. The cast should be thin at the hip so that it can break here. The ankle should be included in casts for fracture of the femur; but, if the cast is thin at the ankle, motion may be preserved.

Suspension strips and especially hitches about the wrist and ankle must be removed before the man leaves the operating room.

If the cast inclines to bend or buckle at the point where it is cut for their removal, reinforcements may be added.

Finally, as long as the wounded can be constantly and carefully watched in the same hospital the circular turns may be allowed to remain; if, however, debridement and immobilization are only preparatory to prompt evacuation, before the man leaves the hospital the circular turn should be slit all the way either up the front or the back of the limb and the cast should be wrapped not too tightly with an ordinary gauze bandage. The cast will be less likely to break if it is thoroughly dry before it is slit, if it is possible to wait twenty-four hours, but it should be slit before the wounded man is evacuated even though it is not thoroughly dry. In dubious wounds it is better not to wrap the cast but to slit it and leave it open. If this is done there need be little fear of constriction or gangrene.

In fractures of the leg the cast is ordinarily applied with the leg lying flat on the operating table; lateral strips are first laid on, as far posteriorly as possible, they are allowed to set, and the circular bandage is then applied. If the leg lies on a rubber sheet the circular turns can be slid under it without lifting it from the table.

Fractures of the femur are put up with the man placed on a sacral rest, his shoulders supported by a box of equal height; the leg is held suspended from overhead pulleys with the knee slightly flexed; traction is made on the ankle by means of a hitch; another sling about the site of fracture keeps the femur from dishing. In the absence of overhead pulleys and in a pinch the femoral sling and the sling about the knee may be held by an assistant who stands on the table, one foot at each side of the fractured femur, facing the patient's feet. He brings the slings about his neck while his back is a little bent; as he straightens up the slings are tightened and the extremity lifted. A thick cotton pad is placed over the abdomen before the plaster is applied to allow for distention.

Fractures of the arm and forearm are put in plaster with the patient seated, on a stool if possible, on the operating table if not. It is almost impossible to put on a thoracobrachial plaster splint with the man lying on his back; hence the need for avoiding ether or prolonged gas anaesthesia. The so-called airplane splint, with the shoulder abducted at 90 degrees, is never used. Such a splint, whether of metal or of plaster, works only when the man is flat on his back; when he is up or has his head raised in bed the weight of the splint causes a valgus angulation of the humerus and produces the deformity it seeks to avoid. If transportation is to be comparatively easy, the arm is put up in 45 degrees abduction or less, with the forearm at right angles to the body in the sagittal plane; the cast should include the chest, both shoulders and the arm to the wrist with a turn or two around the hand, in what is known as the Bastos position, after Bastos, formerly professor of surgery at

Madrid, now prisoner in a fascist concentration camp. Care should be taken not to tighten the turns about the chest; before they are applied the man should be called on to blow his chest up. If he cannot do this the lower part of the chest should be padded. The cast may be reinforced by a stick of wood or a Cramer splint leading from the chest to the elbow. It is not easy to apply and, unless it is fairly heavy, is likely to break at the elbow and no great matter. The weight of the forearm sticking out at right angles to the body tends to twist the whole apparatus outward in order that the arm may drop inward. The projecting forearm makes transportation somewhat awkward; the man is likely to be jostled and bumped unless he is seated, when his knees protect the forearm. If, therefore, evacuation is likely to be troublesome, it may be better to let the man carry his arm at his side and his forearm across his chest in a sling. Cotton pads are put under the arm and between the forearm and the chest; the sling, arm, forearm and chest are then encircled with a few layers of plaster of Paris applied circularly. This position creates an inward rotation deformity of the lower fragment, but it makes evacuation easier, particularly if the man is to lie recumbent, to walk or to stand. The rotation can be corrected later on reaching the base and a Bastos splint applied in correct position. The man should be tagged to this effect when he is evacuated. Evacuation in a 90 degree abduction splint (airplane splint) is torture to all concerned.

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THE TEN COMMANDMENTS FOR THE TREATMENT OF COMPOUND FRACTURES

BY JAMES E. M. THOMSON M.D.

Lincoln, Neb.

What was learned from the last World War and increasing number of casualties in modern transport and other injuries has made possible a clear conception of treatment of compound fractures. Too often first aid and initial medical attendance is inadequate and it is the first 6 to 10 hours which determine the success and failure of a case. The specialist gets the wreckage for salvage. It is difficult to standardise a method because each case presents a different problem sufficient to tax the judgment of the best surgeon.

The object of the treatment should be (1) to care for the general condition of the patient (2) to obtain healing of the broken bone with the best possible alinement and least possible impairment of function (3) to prevent or control infection.

Purely for the sake of impression the author has called his rules as "the Ten Commandments". In the main they have served as a constant reminder against omission and commission, but every Commandment will not apply to every case.

First Commandment. Splint and immobilize a compound fracture at the scene of accident and transport the patient with celerity and great care to a hospital adequately equipped for treatment.

It is deplorable that this is usually done by laymen or a physician untrained to meet the situation. Although the patient may not exhibit but he is potentially in shock and importance of warmth is stressed.

Second Commandment. Make an emergency case out of every compound fracture, giving the earliest possible adequate treatment.

The only exception to this rule is permissible when the shock is too great to warrant delay for resuscitative measures. Usually an hour or two is enough for resuscitation methods. Inspection and X-ray examination should prove sufficient with respect to a suitable Modus Operandi. A general anaesthetic is preferable.

Third Commandment. Scrub the limb about and away from the wound with green soap and flowing sterile water for 10 minutes.

After this the wound itself is irrigated superficially and cutaneous surface painted with a mild antiseptic.

Fourth Commandment. Debride every wound thoroughly with proper respect for anatomic structures and close those wounds which experienced surgical judgment seems to justify.

An understanding of what constitutes a thorough debridement is essential. With a sharp scalpel start at a point farthest away from the dependent position of the wound and remove not only the

cutaneous edges but also attached injured and devitalized tissue. Next, clots and foreign bodies are picked out; devitalized, lacerated muscle tissue and shreds are removed; bleeding points can be stopped and injured nerves and tendons identified. Severed nerves and tendons should be sutured. If the surgeon is not satisfied with debridement only a salt saline irrigation is permissible, but strong antiseptics are further devitalising.

Fifth Commandment. Reduce after debridement, every compound fracture and firmly fix the fragments in position.

Improper alinement and apposition and inadequate fixation form the most reasonable cause of delayed union or non-union. Immobilisation is accomplished by wires or pins above and below the fracture which when embedded in plaster stabilize reduction. Slight movement may injure granulation tissue and may open new fields of infection. Metal Plates, screws, wires and nails have been used and when possible have been inserted through incisions away from the compound wound. When plates have served their purpose they are removed.

Vitalium plates and screws have been used and their use is warranted more often than they are employed.

Sixth Commandment. Coat the wound with crystals of sulfanilamide and give sulfanilamide or its derivatives orally, as indicated.

Sulfanilamide may slow healing slightly but it has a markedly deterring effect on local infection. Oral or parenteral sulfanilamide is recommended in all cases.

Fifth and sixth commandments it is realised offer exceedingly controversial ideas but clinical experience has seemed to have warranted their combined use. If infection is present the wound is left open and packed with petrolatum gauze (Orr treatment). Open wounds are liberally packed with sulfanilamide powder and packed with petrolatum gauze. Dressing is not touched as a rule.

Seventh Commandment. Immobilize compound fracture in a plaster cast adequately fenestrated for the observation of the wound and surrounding tissues.

Joints above and below should be included in the plaster cast.

Eighth Commandment. Give in every case of compound fracture at once a prophylactic injection of antitetanus serum combined with Bacillus Welchii-perfringens serum.

As a routine one minim intradermally is first given half an hour prior to the full injection.

Ninth Commandment. Give a prophylactic dose of X-rays twice daily for three or four days. This practice is followed by the author and as a result gas gangrene has never been seen by him.

Tenth Commandment. Use pectin therapy in all superficial open wounds.

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(J.A.M.A.)

Extracts.

THE PERITONEAL RESPONSE TO POWDERED SULFONAMIDE COMPOUNDS: AN EXPERIMENTAL STUDY.

T. D. Throckmorton, M. D., Fellow in Surgery, Mayo Foundation: The abdominal surgeon is recognizing rapidly the intraperitoneal use of powdered sulfonamide compounds as a possible method of direct frontal attack on the problem of peritonitis. Current comment, as it spreads from medical centres, is both enthusiastic and disparaging. The clinician is interested in results, and it is not surprising that the growing literature relative to intraperitoneal administration of sulfonamides has been devoted initially to a clinical appraisal of the subject. Little has been said of the peritoneal responses to these drugs and nothing of their possible influence on local peritoneal defense mechanisms. This paper is a preliminary report on the peritoneal responses to some of the sulfonamide drugs, particularly sulfanilamide, sulfathiazole and sulfapyridine, when used intraperitoneally in the powdered form. It is conceded that the defence mechanisms of the body are necessary to the complete action of these drugs but any specific stimulation or augmentation of the local cellular responses is not attributed directly to the sulfonamide compounds. This concept is fundamentally sound. However, as the accompanying data show, certain of these chemotherapeutic agents are capable, by virtue of their very presence in high concentration, of stimulating the peritoneal resources to a non-specific defence reaction of marked degree.

METHOD

The experimental animal used was the 100 gm. albino rat. Peritoneal fluid was obtained by abdominal puncture with a glass capillary pipet and the total number of cells per cubic millimeter and the differential distribution were determined. After these control observations, laparotomy was performed, 100 mg. of a powdered sulfonamide compound was distributed evenly in the peritoneal cavity and immediate suture was done with fine silk. Total and differential cell counts were made on the peritoneal fluids of these animals at twenty-four hour intervals for periods ranging from five

to seven days. One group of sixteen rats, on which laparotomy was done without the intraperitoneal introduction of a sulfonamide compound, served as a control series. Animals were killed at intervals for pathologic examination. The following drugs were given intraperitoneally in doses of 1 gm. per kilogram of body weight: sulfanilamide, sulfathiazole, sulfapyridine, sulfadiazine, sulfamethyldiazine and sulfanilylguanidine.

RESULTS

Throughout the entire period of experimentation no deaths occurred among the animals and no toxic manifestations were noted. The total cell count per cubic millimeter of peritoneal fluid, as an index of the quantity of fluid present and so subject to its variations, was found to be of little actual value. Attempts to obtain accurate data on the quantitative cellular changes within the peritoneal cavity were invalidated by inaccuracies in measuring the amount of peritoneal fluid present. However, the differential cell counts, based on cellular ratios, were found to be both reliable and significant.

Control animals.—After the stimulation of laparotomy, the only response was a shower of polymorphonuclear leukocytes into the peritoneal fluid; the relative number of mononuclear phagocytic cells remained unchanged. At necropsy on the tenth day after operation, small omental adhesions to the line of the incision were found in an occasional animal.

Animals receiving sulfanilamide.—No gross evidences of the drug were seen six to 12 hours after its introduction into the peritoneum. There was no stimulation of polymorphonuclear leukocytes beyond levels observed in the controls. The mononuclear phagocytes, however, showed a steady, gradual increase in relative number as typical of a mild peritoneal irritation. Adhesions were present only as in the control group.

Animals receiving sulfathiazole.—The drug remained grossly visible in the peritoneum for three to six days. It usually appeared as an agglutinated mass on the omentum beneath the incision but showed little tendency for serosal attachment or damage. There was a moderate and prolonged polymorphonuclear leukocytic response beyond the control levels, whereas the number of mononuclear phagocytes underwent an immediate and rapid increase for three to four days. Few adhesions were present after fourteen days, as in the control group.

Animals receiving sulfapyridine.—This drug proved to be a marked peritoneal irritant and the quantity of fluid was increased moderately for several days after its introduction into the peritoneum. The agglutinated masses of sulfapyridine were adherent to the serosa and clumps of the drug were walled off so rapidly by the viscera, omentum and the incision that they were found, fourteen

days after implantation, surrounded by foreign body giant cells. Organizing adhesions were frequent and one instance of partial intestinal obstruction was noted. The polymorphonuclear response was similar to that induced by sulfathiazole. The mononuclear cells responded in two ways: there was first an immediate influx of lymphocytes, the small round cells of inflammation, followed by a steady but more gradual increase in the large phagocytic elements, the latter reaction being common to the other drugs employed.

Animals receiving sulfadiazine, sulfamethyldiazine and sulfanilylguanidine.—These drugs were used on small series of six animals each and, in general, they were found somewhat more irritating than sulfathiazole. The sulfamethyldiazine produced the least reaction, and sulfadiazine was only slightly less irritating than sulfapyridine. However, in no instance were unusual adhesions noted on the tenth day, by which time the peritoneum appeared quite normal except for occasional areas of milky fibroblastic proliferation where masses of the drugs had dissolved slowly in close contact with the liver.

COMMENT

The gross disappearance of powdered sulfonamide compounds from the peritoneum has been found dependent not only on the innate solubility of these drugs, but also on mechanical factors: (1) whether an even distribution of the powder is achieved, or whether agglutinated masses of the drugs are formed; (2) the rapid walling off of the more irritating compounds by a stimulated local defense mechanism, especially notable in the use of sulfapyridine.

Although the compounds were introduced into a peritoneal cavity already subjected to operative trauma, production of permanent adhesions was noted only in the use of sulfapyridine.

The cellular responses elicited by the sulfonamide compounds are, qualitatively, those of nonspecific peritoneal irritation. Their quantitative differences seem allied to factors of solubility and irritation rather than to possible specific cellular stimulation.

From these data comparison may be drawn between the relative responses of the peritoneum to these drugs. Sulfanilamide may be considered as innocuous to the peritoneum in local application; it does not incite any polymorphonuclear leukocytic response, and the associated gradual, meager increase of the mononuclear phagocytes is similar to that elicited by only the mildest of irritants. Sulfathiazole is not responsible for any peritoneal damage, but the more delayed absorption of this drug elicits a marked and immediate foreign body reaction which greatly enhances the local defense mechanism. Sulfapyridine is not a drug recommended for intraperitoneal use. It produces sufficient peritoneal injury and local inflammation to bring about its rapid walling off and subsequent uncertain solution. Regarding sulfadiazine, sulfamethyldiazine and

sulfanilylguanidine, their intraperitoneal application seems possible without permanent peritoneal injury, should the occasion warrant. The augmentation of the local cellular defense mechanism by the sulfonamide compounds is similar to the action of various intraperitoneal vaccines and can only serve to enhance the specific bacteriostatic effect the sulfonamide compounds exert. These factors of solubility and cytologic response should influence the choice of sulfonamide compounds for intraperitoneal administration as they are used prophylactically or to combat active infection.

REINFECTION IN CONGENITAL SYPHILIS.

Richard D. Hahn. Am. J. Syph., Gonorr., and Ven Dis., St. Louis.

The literature on second infection in congenital syphilis is reviewed. Up to the present time no indisputable second infection in a congenital syphilitic patient has been reported. In the earlier case reports the diagnosis of both the congenital and acquired infections had to be inferred from clinical appearances alone. More recent authors usually conformed to adequate criteria for the demonstration of the acquired infection, but they accepted rather ill-defined dystrophies or purely anamnestic data as sufficient evidence for the previous presence of congenital syphilis.

The presumed significance of many of the so-called dystrophies is derived from the older clinicians and includes (especially in the French literature) practically all the ills to which human flesh is heir. Presumed reinfections in which the presence of more or less vague dystrophies is the sole evidence of congenital syphilis cannot be accepted. The first infection must be proved to be congenital.

Second infection is very rare in acquired syphilitics who have reached the latent stage before the institution of treatment. It is altogether unlikely that second infection should occur in previously untreated tardive congenital syphilitics. Yet it is this type of case which has comprised the bulk of those reported in the literature.

The first early congenital syphilitic patients adequately treated by modern standards, are now reaching an age at which the incidence of acquired syphilis is high. It is with the hope of stimulating a search for more such patients that the author reports the present cases.

The author found 104 cases of probable or possible reinfection listed in the diagnosis file of the syphilis clinic of the Johns Hopkins Hospital. Among these, only three represented reinfections in possible congenitally syphilitic patients. One of these first came under observation at the age of 8 years. This case is not included in this report due to the obvious impossibility of entirely

ruling out syphilis acquired early in life. The other two are reported in detail.

These two cases conformed to rigid criteria for both the congenital and the acquired infection. In the first there were 13 years of clinical and serologic negativity, including a negative cerebrospinal fluid, between the congenital and the acquired infection. In the second, although the serologic test for syphilis at no time became entirely negative, there were at least 8 years of clinical negativity between the congenital and the acquired infection.

FACTORS INFLUENCING THE COURSE OF SYPHILIS.

Hugh J. Morgan. *Am. J. Syph., Gonorr., and Ven. Dis.*, St. Louis.

The author describes the so-called "typical course" or general pattern of syphilis in man. He stresses the fact that the disease does not always conform to this pattern. The human body is noted for the vagaries it exhibits when reacting to infection with *Treponema pallidum*.

He considers a few of the factors responsible for the protean nature of the disease. Some of these factors are indigenous to the host; others, to the parasite; and still others, to the environment in which the host and parasite exist.

The factors discussed which influence the course of syphilis are as follows:

1. Race: No true racial immunity exists. Turner found Negroes to be more susceptible than white persons to certain types of skin lesions, bone involvement, iritis, and aortitis. Cardiovascular syphilis was found to occur about twice as frequently in Negro as in white males. Tabes and paresis occurred much less frequently in Negro than in white patients. In experimental syphilis anthropoid apes have been found much more susceptible to syphilis than lower animals.

2. Age: Syphilis developing during intrauterine life is commonly fatal. Infants and very old patients seem to have the disease more severely than do members of other age groups. In experimental syphilis, Chesney noted that younger animals had more violent initial lesions than older ones, although subsequent generalized lesions were somewhat slower in developing and were less severe in character and extent.

3. Sex: Syphilis in the female produces much less conspicuous manifestations than syphilis in the male. In the clinics men with acute syphilis greatly outnumber women with such manifestations. Women outnumber men among patients with latent and chronic syphilis. The incidence of cardiovascular syphilis and

central nervous system syphilis is lower in women than in men. Moore has emphasized the beneficial influence of pregnancy upon the course of syphilis in women and has called attention to the fact that cerebrospinal fluid abnormalities were twice as frequent in a group of sterile women as in a comparable group of women who had become pregnant at the time of or following infection.

4. Environment: Intercurrent infections may modify the course of syphilis. Neurosyphilis commonly progresses unfavourably in the presence of acute respiratory infections. Syphilis or antisyphilitic infection may unfavourably influence the course of tuberculous infection. Hypertension predisposes to the development of aortic regurgitation in persons with syphilitic aortitis. Trauma may influence chancre formation, and it may result in the localization of the widespread skin and mucous membrane lesions of early syphilis. Gummatous lesions occasionally develop in surgical scars, in traumatized testes, and in fractures.

5. Specific treatment: The specific treatment of early syphilis is designed to cure the disease, or to arrest it and prevent serious late sequelae. Sometimes, however, specific treatment not only fails to accomplish these ends but exerts an unfavourable influence upon the course of infection. The commonest factor predisposing to the development of acute syphilitic meningitis or cranial nerve inflammation in some, but inadequate, specific treatment. The author discusses the reason for this phenomenon.

6. Nonspecific treatment: Trypan blue and lecithin in experimental syphilis in animals and fever therapy in clinical syphilis are discussed. The beneficial effect of trypan blue and lecithin in rabbits seemed to be brought about by a speeding up of the reparative processes of the body by the clasmatoocytes rather than by any direct action of the latter on *T. pallidum*. This may throw light on the mechanisms involved in other forms of nonspecific therapy, including malaria inoculata. In acute syphilis elevation of the body temperature inhibits the natural progression of the disease, and leads to the destruction of *T. pallidum*. This inhibition by fever probably cannot be utilized alone to any great practical advantage in the treatment of early syphilis. It has been employed as an adjunct to chemotherapy. The thermal factor may contribute to the striking seasonal variation which characterizes the disease manifestations of rabbit syphilis. It is very difficult to induce typical active syphilis in rabbits during very hot summer months unless the rabbits are kept in a cool place. Sunlight and diet may also effect significantly the course of the experimental disease.

7. *Treponema pallidum*: It has not yet been proved that there are strains of this organism which, when present in man, exhibit predilections for certain tissues or organs. Experiments have been performed which indicate that the quantity of the virus is important

in determining the course of syphilitic infection, although differences in the quality of the virus have not been proved to be significant factors. In experimental syphilis it has been found that the larger the dose of organisms injected into the rabbit, the shorter the incubation period of the disease. Single organisms injected intratesticularly in the rabbit have not induced infection. In human condyloma fluid, counts of organisms have ranged from 3,700 to 246,000 *Treponemata pallida* per cubic millimeter. Counts on fluid from eight chancres varied from 370 to 29,500 per cubic millimeter. If the susceptibility of some human beings to infection with syphilis is as great as that of some rabbits studied (and there is good reason to believe that it is), an inoculum of less than 1/150 cubic millimeter of human chancre fluid or less than 1/375 cubic millimeter of condyloma fluid may result in infection with syphilis.

Medical News and Notes

PHARMACEUTICAL RESEARCH

DR. JIVARAJ MEHTA'S PLEA

Address at Conference in Bombay

"It is indeed a matter of shame that a vast country like India with tremendous natural resources, both in raw materials and in motive power, should have to depend on other countries for her economic and industrial life" observed Dr. Jivaraj Mehta, presiding over a Conference of Manufacturers of Chemical and Pharmaceutical Products and Representatives of Universities and Research Institutions held in Bombay, on September 20.

Dr. Mehta said that "in order to make India self-sufficient so that we may not find ourselves in such a helpless predicament as we did during the last war and as we find ourselves again to day, it is essential to utilise these resources to the best advantage of the country. This can be done through the use of Science on a more extensive scale than what has been done so far. Science can help us in the utilisation of raw materials as well as waste products which were exported before the war for use in the economic life of the country. Science in all its branches is intimately and indissolubly concerned with the organisation and development of industries ministering to the peace time and wartime needs of all modern communities. In this unfortunate country industrial development is very slow and very little effort is made to apply science to industry."

Dr. Jivaraj Mehta referred to the realisation of this backwardness and to the establishment in 1934 of the Industrial Research Council. But the researches undertaken had little relation to industrial development. There was no agency which would take up the research and try to see its industrial possibilities. Spasmodic unconnected, unco-ordinated and disjointed efforts in the field of scientific research were worse than useless. Careful linking up and co-ordination of all research in every department of pure and applied science was indispensable if real research was to bear the desired fruit. It would be for this conference to devise measures to tackle this problem as early as possible. Dr. Mehta viewed with satisfaction the appointment of a Board of Scientific and Industrial Research by the Government of India. About 200 scientists, he added, were now working under the auspices of the Board and this regimentation of a certain number of Indian scientists was having its effect and scheme of research had begun to take shape for industrial utilisation.

Dr. Mehta then went on to point out that the main purpose of the conference was to obtain suggestions for framing a scheme for closer collaboration between manufacturers and research institutions with a view to bringing about a speedy development of the chemical pharmaceutical industry in the country. It had been suggested that the universities and research institutions should provide facilities in their laboratories for the researches to be carried on. This would be helpful to both sections and if the conference agreed on the main idea underlying the suggestion, a detailed scheme might be left to be discussed by a sub-committee of the conference.

While emphasising that it was the important function of the Government to organise industrial research, Dr. Mehta urged that industrialists, on their part, should also come forward, from time to time, with generous endowments to the universities and other institutions doing industrial research. Dr. Mehta also explained that applied research concerned not only big business. Much applied research was also called for the protection and development of village industries.

RESOLUTIONS

The need for closer co-operation and co-ordination between manufacturers on the one hand and research workers and institutions on the other was reiterated in a resolution adopted by the Conference after speeches were over.

The Conference urged that facilities should be provided by research institutions, universities and colleges for industrial researches being carried on in their laboratories on behalf of the manufacturers of chemical and pharmaceutical products.

The Conference also requested the various universities and research institutions that post-graduate research work by their

students be carried on in such a manner as to prove useful to the development of chemical industries.

With a view to bringing about a speedier development of industrial research, the conference suggested that the Government should set apart an adequate portion of excise revenue collected from pharmaceutical products and preparations to provide for the establishment, maintenance and assistance of research and field laboratories in the various Provinces and States.

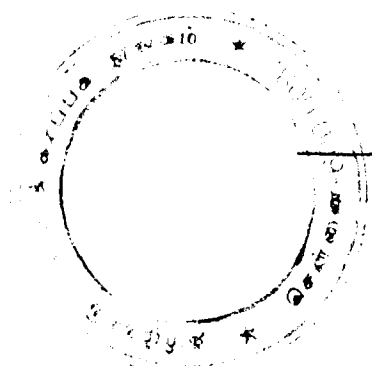
A sub-committee was also appointed to frame a detailed scheme of closer collaboration between manufacturers and research institutions.

POSITION OF MEDICAL LICENTIATES.

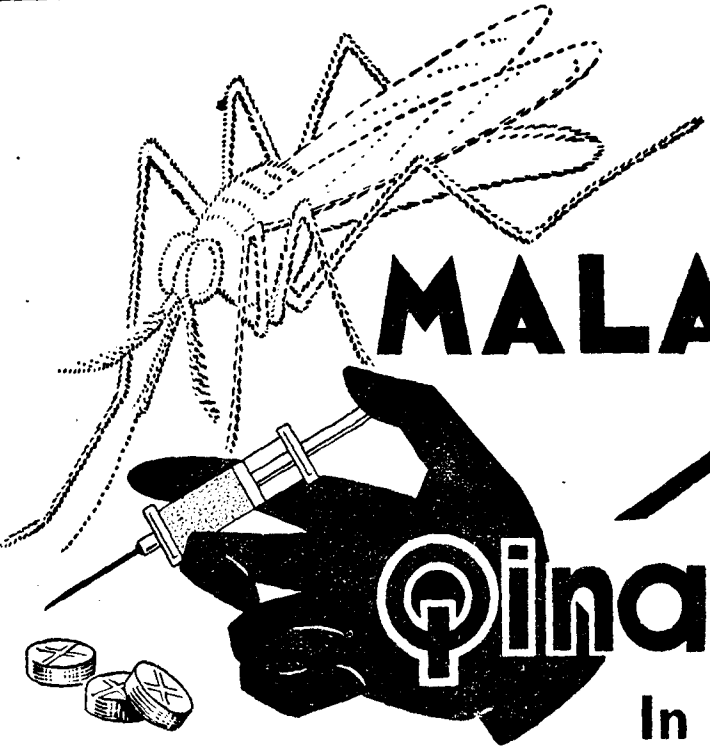
DR. NARAYANA RAO'S ADDRESS.

A plea for the abolition of the College of Physicians and Surgeons of Bombay and the establishment of one uniform standard of medical examination in the country was made by Dr. U. B. Narayana Rao, presiding over a meeting held under the joint auspices of the Bombay Branch of the All-India Medical Licentiates' Association and the National Medical College Old Students' Association. Dr. Narayana Rao also protested against the recent move of the College in Bombay in increasing the course of the student—licentiates to four and a half years, only just half a year less than that for graduates. Dr. Narayana Rao explained that the All-India Licentiates Association and the Indian Medical Association, the Ministers' Conference in 1937 and the Indian Medical Council in 1941 were in favour of a uniform standard. Dr. Rao referred to 'the unjust treatment' of the Licentiates and said that even though the course had now been extended so as to be only six months less than that for the graduates, the status of future licentiates would not be higher than those at present.

In conclusion, Dr. Narayana Rao urged the abolition of the course and said that until the schools should be converted into colleges, a state medical faculty representing all interests should be established as in other provinces.







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Medical Bulletin, Vol. VII, No. 19, Oct. 7, 1939.

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