

MEDICO SURGICAL SUGGESTIONS

Vol. VI.

MAY 1937

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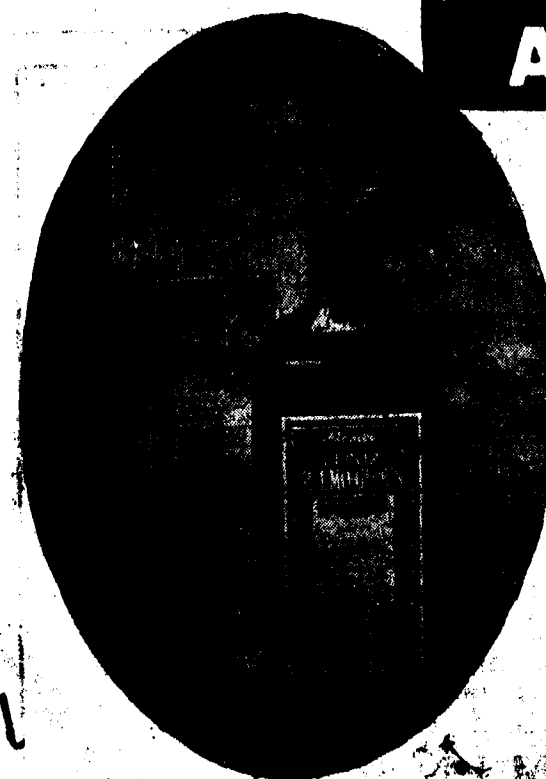
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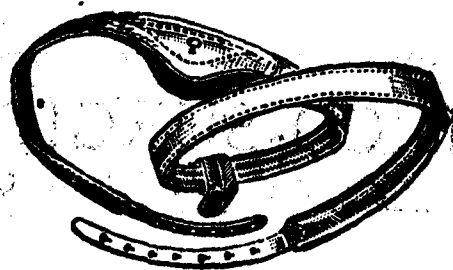


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CARE OF THE PREMATURE INFANT.

A. L. SALOMON, M.D.

Oklahoma City.

Etiology: The causes of prematurity are many and varied, and may be roughly divided into two classes:

1. Those conditions which might cause a premature expulsion of a normal baby. Under this might be classed injuries, heavy lifting, physical exhaustion, emotional upsets, accidental or intentional rupture of membranes, and surgical procedures not directed to the uterus itself.

2. Those conditions which react upon the fetus itself. Under this, falls the infections, either acute or chronic, or some condition, which through its debilitating effect on the mother, directly affects the nutrition and development of the fetus. According to many observers, syphilis is responsible for fully one-fourth the cases of prematurity. Chronic nephritis is a common cause of spontaneous premature expulsion of the fetus and these premature babies of a chronic nephritic are usually weak babies, and the prognosis in these cases is always more grave. During the epidemic of influenza in 1918, there was a marked increase in premature births. Multiple pregnancies result quite often in premature birth, Hess stating that seventy per cent of twin pregnancies terminate prematurely. In quite a large percentage of premature births no cause can be determined.

In the handling and care of the premature baby, our first consideration should be the realization that we are dealing with an individual, all of whose bodily functions are under-developed. There is a poorly developed musculature; the osseous development is immature; the respiratory system shows an under-development almost characteristic. This is due to the poor development of the respiratory muscles, and to the depressed and under-developed respiratory centres. Partial atelectasis is rather the rule in the premature. Imperfect oxygenation due to the weakened respiratory muscles and

centres, and to the atelectasis, cause frequent cyanotic attacks. These are brought on by taking food, vomiting, or without apparent cause. There is a more rapid depletion of the hemoglobin following birth in the premature than in the full term baby, though this might be one hundred or more at birth.

One of the most prominent and consistent characteristics of prematurity, is the inability to maintain a regularity of the body temperature. There is a marked tendency to subnormal temperatures, due to the small amount of subcutaneous fat, and the relatively large radiating surface. There is also a tendency to assume the temperature of the surrounding air, and hyperthermia may be easily produced by external application of heat.

The premature is more susceptible to infections and a slight trauma may produce a condition of serious consequence.

The brief outline of conditions existing in the premature, leads us to our careful considerations in the immediate and later care of them. The prognosis of the ultimate outcome is one of difficulty though may be influenced by the following.

1. The age of utero. The favourable outcome is directly in proportion to the age in utero. The small baby born at the eighth month certainly gives a more favourable prognosis than the larger one at seven months.

2. The size, plus the information obtained as to intra-uterine age may influence the prognosis, a more favourable prognosis determined directly by the weight.

3. Body temperature and its ease of maintenance is of prognostic value, those babies whose temperature remains within one or two degrees of normal, having a fair chance to live. The chances decrease with the lowering of the temperature.

4. The general appearance of the baby is a reliable source of prognosis. The infant showing fair muscle development, skin elasticity, and a lusty cry, with fairly well developed suckling ability, certainly offers more hope than otherwise.

MANAGEMENT AND CARE.

The prevention of prematurity is one of the obstetrician's problems, and it is not the purpose of this paper to go into that. At best the percentage will not be low enough. There are few thoughts that should be in the minds of the obstetrician when he knows that he is dealing with a baby about to be borne prematurely. Extreme gentleness to reduce trauma, preparations to avoid chilling and strict asepsis.

The immediate care of the premature from a pediatric standpoint resolves itself into three main considerations. First, maintenance of body heat second, asepsis; and third, feeding. Nursing care may be added, as certainly no condition requires the careful and expert handling of a competent nurse more than the premature infant.

MAINTENANCE OF BODY HEAT.

No detail in the management of the premature is as important as this. Loss of body heat should be minimized both at delivery and afterward. Warm sterile blankets, or cotton pads, should be immediately available and the baby delivered into this, while the later step of delivery, i.e., cutting the cord, is done, and this done as quickly as possible. Bathing and oil baths should be dispensed with for the first few hours until the body temperature, which has been lowered during delivery, is brought up. A pre-heated crib should be in readiness, and the baby left absolutely quiet and undisturbed. This brings up the question of the best type of heated crib, or incubator to be used. I have found that the improvised incubator to be as efficient as those sold commercially. Primarily, they should provide sufficient external heat to keep the infant's temperature constantly within normal range. A well padded basket and heated by hot water bags or electric bulbs, with a half of the opening of the basket covered with a blanket, makes an acceptable improvised incubator. A thermometer should be suspended beneath the covering and the temperature maintained at a sufficient level to bring about a normal temperature in the infant. I know of no arbitrary figure at which to set this—it may vary with the size and condition of the infant. Ordinarily ninety degrees or above is needed. Over-heating, provided proper humidity is maintained, is not often injurious. Once the infant is placed in this crib, whether it be the improvised or commercial incubator, handling should be reduced to the absolute minimum, only being disturbed for those things which are absolute essentials. This will minimize temperature fluctuations, and there will be less vomiting. The length of time the baby should be kept under these conditions will depend entirely on the progress, the temperature being reduced as the development of the baby shows that it is able to maintain its own body temperature.

ASEPSIS.

As has been pointed out, the premature is much more susceptible to infections than the mature infant, and the strictest aseptic precautions should be taken. The hands of the attendant should be aseptically washed, masks should be worn, gowns should cover the ordinary clothes, and above all, visitors should be prohibited from the room or nursery.

FEEDING.

The feeding of the premature infant presents a problem that is a perplexing one, and one which might present many difficulties. Not alone in the selection and adaptation of a suitable food, do many problems arise that might cause concern as to the ultimate outcome, but also to arrive at a manner in which the food might be given, so as to put the least physical strain on a constitution which at best, is at a lowebb. While practically all the digestive ferments are

present in nearly normal amounts in the alimentary tract of the premature infant, the intestinal tract is more inert. The aim of the physician then resolves itself into the following factors: to prevent as nearly as possible a loss of weight; to prevent vomiting, and to provide a suitable food in such amounts and intervals as to bring about a gain in weight without gastro-intestinal disturbances. Whereas in the normal full term baby weighing six to seven pounds an initial loss of several ounces is of no great concern, yet the same loss in the premature presents a percentage loss, which assumes grave proportions. To prevent the initial loss of weight, fluids should be given early, preferably four to six hours after birth. I can not see the advisability of waiting twelve to eighteen hours before administering fluids.

The manner of giving the foods is one of extreme importance. Bearing in mind the generally weakened condition of the premature, it should be our idea to conserve energy in every manner possible. Considerable energy is expended in suckling, especially since all the muscles which might be brought into play, are poorly developed. I have found that tube feeding, by means of a catheter, either through the nose or mouth, has resulted in such good, that I, personally, feed all premature babies in this manner, during the first few days. The length of time that this should be continued, will depend entirely on the progress of the infant. With a competent, careful nurse this might be kept up for quite a while, with no apparent ill effect on the baby. The attendant, or nurse, administering food in this manner, must necessarily be experienced and one whose judgment is sound. Care must be exercised to prevent trauma, using first one nostril and then the other in the event that nasal gavage is used, and then at other times putting the tube through the mouth. The distance which the tube is to be inserted should be measured, and marked indelibly on the catheter. This distance is obtained by placing the distal end of the catheter at the tip of the ensiform cartilage and measuring to the tip of the nose, this measurement to be used in nasal feedings. A second measurement, the same except for making the tube at the level of the lower lip, to be used for gavage through the mouth. In this way, the possibility of getting the tube too far into the stomach, thereby traumatizing the delicate stomach membrane, is avoided.

As the baby progresses, the manner of feeding may be stepped up, as it were, with an idea of developing the suckling muscles. Following the tube feedings, the ordinary medicine dropper may be used, watching closely the baby's attempt to suckle. When this occurs the Breck feeder, being a hollow tube fitted at one end with a bulb and a nipple at the other, is used. Pressure may be made sufficient to force the fluid through the nipple. After a few days of this, we find that the infant can be on its own, and taking food satisfactorily

from the bottle. If in the change from one step to another, vomiting should occur, and should persist for a few feedings, then it is best to go back to the method previously used. While I have no statistics available, I am quite positively convinced; since making this a routine matter in the manner of feeding these premature babies, that our digestive disturbances have been less, gains in weight have been more consistent, and in general there has been a more rapid progress past those first few trying days in the lives of these prematurely borne babies.

FEEDING INTERVALS.

I do not believe it possible to arbitrarily set down the intervals at which the premature baby should be fed. This will depend largely on the judgment of the attendant. Ordinarily the short feeding intervals—one or two hours—is not desirable. It entails too much handling and too frequent disturbance of the delicate mucous membranes. There are very few prematures which do not progress more satisfactorily on the four hour interval, up to such a time as bottle feedings are instituted and then at three hour intervals.

The food requirements of the small baby are much higher per pound body weight than the larger mature baby. Whereas a full term baby may gain on sixty to seventy calories per pound body weight, frequently the premature will not gain until calories are supplied totalling seventy-five to eighty. The amount to be given will depend on the size, kind of food given, the intervals between feeding and above all, it will be governed by close observation.

FOOD.

In the selection of food for the premature there can be but one answer to the question—all others are but at best, poor substitutes. The one food so highly desirable that it behoves the attending physician to go to any amount of trouble to obtain it, is breast milk. In the case of institutionally delivered babies, this can usually be done. It is quite often possible to obtain breast milk from some mother successfully nursing her own baby. This may be done, considering the small amount needed for the premature, and the fact that careful emptying of the breasts, either by manual expression or breast pump, promotes a more generous milk supply. The electric breast pump, in the hands of a careful operator, has proven most efficient. Diligent search for suitable breast milk should be instituted at the birth of the premature. It should be borne in mind that the probabilities of the mother nursing the premature baby are greatly against it, the very condition causing the prematurity, affecting, to a great degree, the likelihood of her being able to nurse the baby.

Should breast milk not be obtainable, then of course artificial feeding must be our last resort. The matter of selection then resolves itself into that food with which the attendant is most familiar.

There are on the market, numbers of proprietary foods, all of which have proven valuable in the hands of different pediatricians. The ordinary milk, water and sugar mixtures have been used successfully; accumulated milk has been advocated by others; and the various dried milk mixtures have likewise, produced good results.

Hence, I am convinced that best results are obtained by the use of that preparation with which the pediatrician or physician is most familiar.

(*The Journal of the Oklahoma State Medical Association, August 1936.*)

THE PREVENTION, DIAGNOSIS, AND TREATMENT OF CHILDHOOD TUBERCULOSIS.

PREVENTION.

In order to prevent tuberculosis, a knowledge of the sources of infection as well as the modes of entry of tubercle bacilli into the body is necessary. Since the discovery of the tubercle bacillus by Koch in 1882, a gradual increase of information regarding both of these factors has been given to us by competent investigators all over the civilized world. It is the consensus of opinion of all modern investigators that practically all of the pulmonary tuberculosis and 80 per cent of all types of tuberculosis are due to infection from human carriers. Bovine tuberculosis, while it accounts for many cases of extra-pulmonary tuberculosis, has been greatly diminished through control of dairy herds by means of the tuberculin test. It is not usual for human beings to develop tuberculosis from avian sources, although it has been thought that Hodgkin's disease may result from this type of tuberculous infection and, so far as we know, tuberculosis of cold-blooded animals is not transmitted to human beings.

The entry of tubercle bacilli into the body is varied. They may be introduced directly through inspired air, they may be swallowed with saliva, or food, and gain entrance through the intestinal walls, or they may enter through other mucous membranes, through the tonsils and the skin. No matter how tubercle bacilli enter the body, it is possible for them to reach the lung. It is believed that tubercle bacilli may be taken directly from the gastro-intestinal tract with the chyle through the lymphatics into the thoracic duct to be carried through the subclavian vein to the right heart, and from there directly into the pulmonary circulation so that the first place they

may be stopped is in the tissues of the lung. No matter in what tissue the primary focus may be, what is known as a primary complex is developed. This was discovered by Parrott in 1876 before the tubercle bacillus was discovered, and at that time he made a statement which is known as Parrott's Law which established the fact that when first tubercle bacilli find lodgment in any particular tissue, they quickly find their way into the lymphatic vessels draining the area and thence to the glands into which these lymphatics enter.

The reaction that occurs at the focal point is not a specific one for tubercle bacilli but resembles that which occurs when any particulate foreign body enters the tissues and it is not until sensitiveness or allergy is produced by the tuberculo-protein that specific inflammatory reactions occur. This primary complex is not always formed in the lung but may develop in any organ. In the case of entry of tubercle bacilli through the wall of the intestine, the primary focus may develop there and bacilli passing from it through the lymphatics draining the area finally reach the mesenteric glands of the area involved. If the infection has not been too severe, and the natural immunity of the child or person who has this first infection is sufficient no ill effects are produced. So far as clinical signs and discomfort to the patient are manifested, such infections may be entirely unrecognized and fortunately this is found to be true in the majority of primary infections. Often there is extension of these primary infections from the primary focus itself or from the infected gland either through contiguous spread or by means of bacilli being carried to other tissues or organs through the lymphatics or the blood stream. Whether or not immunity develops as a result of this first infection has been discussed pro and con but one thing is certain; practically always an allergy is developed which makes subsequent infections, whether exogenous or endogenous, considerably more dangerous than the first infection because of this increased sensitiveness.

J. Arthur Myers and Francis E. Harrington in an article of the *Journal of the American Medical Association* of November 17, 1934, bring out some very interesting points. In studies of children, beginning in 1921 and carried through the years, they showed that five times as many children who were tuberculin positive at that time have developed tuberculosis as those who were tuberculin negative at that time. The study was made on two groups of children beginning in 1921 and 1922 respectively and carried up to 1934. If this proves anything at all, it would seem to prove that the first infection should be postponed as long as possible, and that immunity of any consequence is not developed through tuberculous infection but that it does furnish a double health liability: First, that tubercle

bacilli are introduced into the body and may remain alive in the apparently harmless lesions for years only to escape from them at a later time to develop destructive lesions on allergic ground; second, that the allergy which develops by reason of the first infection makes any reinfection exceedingly more dangerous.

DIAGNOSIS.

The earliest information of a tuberculous infection that may be obtained is through the tuberculin test. Usually in three to six weeks after tubercle bacilli have entered the body a sufficient amount of allergy or sensitiveness to tuberculo-protein will develop so that there will be a positive reaction to tuberculin. In most instances no symptoms of this early invasion can be noticed and there may be no x-ray evidence of it, as in most instances any inflammatory reaction there may have been about the site of invasion quickly disappears and unless the glands involved are very large they cannot be seen until they become calcified and this process usually requires many months before it may be demonstrated by x-ray. The plan of tuberculin testing all children at as early an age as possible, and repeating it at interval when it has been found negative, will, when positive in the one instance, definitely prove infection has taken place, and, in the other, establish very closely when it took place, and should be encouraged. Then, with this information, knowing that a child has been infected and finding signs and symptoms of toxemia, one should strongly suspect that active tuberculosis may be the cause of them. The positive diagnosis in such cases may be further proven by x-ray study through the presence of demonstrable lesions. It must be kept in mind, however, that in children who are manifestly ill, who have positive tuberculin reactions and negative x-ray findings, there may be unhealed lesions in the lymphatic glands or in some other part of the body that cannot be detected by x-ray. Such children should be given the benefit of the doubt and, while not being definitely diagnosed as tuberculous, should be treated as though they were.

The symptoms of extension of primary lesions, or of unhealed or active primary lesions are produced by the toxins liberated from them. When a child becomes listless, does not play normally, begins to fail in his studies at school, or becomes irritable or develops a poor appetite, loses weight or does not gain properly or normally, the possibility of active childhood tuberculosis must be strongly suspected and under such circumstances x-ray and laboratory studies should be made. When there is cough, the sputum if it is obtainable should be examined; if not, smears made from swabbings from the pharynx or examination of the gastric contents, and of specimens from the intestinal tract may disclose the presence of tubercle bacilli. By such means open and communicable tuberculosis may be definitely established occasionally.

TREATMENT.

The child that acts normally, plays and studies and acts well, even though he may have a slight temperature, a positive tuberculin test, and calcified glands, requires no special treatment. Attention should be directed in these instances toward establishing a proper diet, a reasonable amount of open air activities, regulation of sleeping and eating habits, and occasional observation by the physician and usually this is all that is necessary. However, the child that is definitely toxic should be put to bed and kept there twenty-four hours a day as long as is necessary to rid him of the symptoms definitely due to toxemia. The extent of the lesions and the time required for the symptoms to disappear, which may be a few days or a few weeks or even many months of strict bed care, will determine the amount of rest that is necessary following it. Ordinarily the child with either no noticeable lesions or small ones may be adequately taken care of merely by correction in diet in which there should be a pint to a quart of milk daily and in some cases increased rest which may be obtained easily and adequately by requiring the child to retire earlier in the evening and get up later in the morning.

It is not necessary to stuff these children with milk and eggs or any other particular kind of food and to do so usually results disastrously. Neither should a child be nagged about taking more food than he wants to take, but he should be encouraged and required within reasonable limits to eat what is known to be desirable for him to eat. It is usually sufficient merely to have the food supply well balanced. Milk is valuable because it affords a natural and rich supply of calcium. Cod liver oil is valuable and children can usually accustom themselves to its use easily. Viosterol may be added as the judgment of the physician dictates. Direct sunshine should not be used in active tuberculosis. It may be used, however, to advantage in tuberculin positive children in the absence of symptoms of toxemia. In those cases where extensive and destructive pulmonary tuberculosis of the reinfection type is present, treatment should be the same as in the adult. Strict bed care for as long as may be necessary is imperative. Many cases can be benefited by artificial pneumothorax, and it may be used in very young children advantageously.

CONCLUSIONS.

1. The chief source of tuberculosis in human beings is tuberculosis in other human beings who have it in communicable form.
2. The earliest information that we may have of tuberculous infection in an individual is evidently through the tuberculin test.

3. Because of the development of allergy which is responsible for the disastrous effects of reinfections, the primary infection should be postponed as long as possible.
4. Every child with a positive tuberculin reaction should be under the close supervision of the family physician to the end that his resistance might be kept by proper dietary and hygienic measures at the highest level and so that, when symptoms of disease develop, early and adequate treatment may be instituted.

H. O. SCHENCK, M.D.,

Chief, Division of Tuberculosis Control.

(*Journal of Medical Association of Georgia*).

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Amputation of fingers ... 8	Neuroma, excision of, in painful stump ... 2
Appendectomy ... 1	Skin graft, pedicled ... 1
Bursa, olecranon, excision of ... 2	Tumor of face, excision of ... 1
Carbuncle of neck, excision of ... 2	Plastic on face ... 5
Dislocations, shoulder and fingers ... 3	Secondary ligature of femoral artery ... 1
Fractures of upper extremity ... 7	Varicosectomy ... 3
Herniotomy ... 2	

The appendectomy and herniæ were done to determine with what success abdominal work might be undertaken with evipal anesthesia. The anesthesia was quite satisfactory and relaxation excellent. However, in some patients to whom evipal was administered with other conditions, it was evident that satisfactory relaxation would not have been sufficient to do such operations as appendectomy with ease. For the hernia and appendix, spinal or other types of anesthesia still appear preferable. Evipal is particularly valuable in operations about the head and face, or about the neck, as the operator is not hampered by the anesthetist.

Evipal soluble is obtained in sterile ampules containing one gram of the drug. The white crystalline powder is dissolved in ten cubic centimeters of sterile distilled water. This makes a 10 per cent solution. The amount to be given the patient depends essentially upon the individual reactivity of the patient. It also depends upon the duration of the anesthesia desired. While theoretically if the weight of the patient in pounds be multiplied by 0.06 the safe number of cubic centimeters of the 10 per cent solution may be obtained. In practice, however, I have not found this small amount sufficient for operations requiring more than ten or fifteen minutes.

In the majority of adults 3 to 4 c.c. of the 10 per cent solution are required to induce unconsciousness. This amount is injected into the vein of the forearm slowly over a period of 10 to 30 seconds. The patient is instructed to count slowly until he falls asleep. After a brief interval 2 or 3 c.c. more are injected and it is usually found that the patient sleeps soundly for a period varying from five to fifteen minutes. For operations such as appendectomy or herniotomy two ampules or two grams of evipal may be required. The first ampule of 10 c.c. is usually given within the first five minutes and if the patient shows signs of awakening an assistant may inject a part or the whole of the second ampule. The second ampule is never given immediately following the first, but only after some period of time has elapsed and only if the patient shows signs of awakening. It is then given more slowly and with careful observation for evidences of toxicity.

No preliminary medication of morphine or other sedative was used. The induction was in all cases entirely quiet. The patient may yawn once or twice as he becomes somnolent. As the patient goes to sleep the jaw usually drops and the tongue tends to fall back and may interfere with respiration. For this reason a doctor or nurse should see that the jaw is held up and that an airway is inserted if respirations are not normal.

The pulse remains full and regular with slight acceleration of the rate in some cases. There may be a slight drop in the blood pressure. The color remains pink and unless there is interference with respiration there should be no cyanosis.

The induction of evipal anaesthesia and the recovery are rapid and comfortable. With small amounts injected for minor operations the patient is again ambulatory after a short period of time varying from ten to twenty minutes. With the administration of a whole second ampule the patient will usually sleep quietly for forty-five minutes. With the larger amounts, the patient may show some restlessness at the return of consciousness, will answer questions when aroused, and then may go back into an apparently normal sleep which, if undisturbed, may last for one or two hours. Occasionally a patient will be temporarily difficult to manage and will behave like a slightly intoxicated person.

In a number of minor operative procedures such as opening an abscess of the hand, when a small amount of evipal is used, the patient may object strongly to the operation by attempting to withdraw the hand. However, when the operation is completed and the patient has awakened he is wholly unaware of having experienced any pain or of having struggled during the operation. It has been our custom to have the patient count slowly, and as sleep comes on he slows and then ceases counting usually before reaching twenty-five. As consciousness is regained some minutes later quite a number begin counting from the point at which they ceased when they went to sleep. Slight muscular twitchings were noted in about 30 per cent of patients. In 15 per cent of patients relaxation did not occur.

In three patients intramuscular injections of one gram of evipal were given one hour before operation to determine the stage of anaesthesia which might be induced by that method. The results were not satisfactory as the patients became restless and behaved in a slightly intoxicated manner and apparently obtained no appreciable analgesia.

Since evipal is a respiratory depressant and since it is eliminated in the bile and through the kidneys it would seem advisable not to give it to patients with any respiratory difficulty or in those with definite renal or liver pathology.

SUMMARY.

Evipal anaesthesia is relatively safe and is quite satisfactory for operations of short duration, particularly those about the head and neck.

Its ease of administration, rapidity of induction, rapidity of recovery and freedom of unpleasant after-effects make it particularly useful to the doctor who does his minor surgery in his office or in the home and does not have a skilled anaesthetist at his command.

It is of use in the emergency operating room or large outpatient clinic. It is valuable for the emergency surgical patient who has a respiratory infection that may contraindicate the use of an inhalation anaesthesia.

Evipal is satisfactory for the patient who objects to a general inhalation anaesthesia or to a spinal injection, yet has some surgical condition requiring a general anaesthesia of short duration.

—Colorado Medicine, July 1936.

STERILITY

BY P. N. CHARBONNET, M.D.

Tulsa.

One of the strongest links in the chain binding Obstetrics and Gynecology is the condition of sterility. For many years efforts have been made, at various times, to divorce Gynecology from Obstetrics; Gynecology from Surgery. The consensus remains that Gynecology and Obstetrics should be more closely associated than any other two branches of medicine. The very poor results obtained by the majority of general surgeons, who have no knowledge of Obstetrics, in treating Gynecological conditions, is one of the strongest arguments in favour of this union.

Sterility is a disease. It is a disease which brings to the office of Gynecologist, almost, and this sounds ludicrous, as many seeking relief for this condition, as those who come for the purpose of obtaining contraceptive information. The number of households that have been made miserable by the inability of the parents to procreate is attested by the large numbers of foundlings taken out for adoption from the various institutions serving that purpose.

Sterility as any other disease, is one that can and should best be approached from a standpoint of prevention rather than of cure. This care should begin in adolescence, by the teaching of the principles of health and hygiene to the future fathers and mothers of the nation.

Young men and women approaching marriage should be told something of its duties and its functions. Treatment of adolescent girls should be carried on with a view to forestalling genital hypoplasia. Efforts should be made to eradicate venereal diseases. Instructions should be given, not only when indicated, but when asked for, concerning the use of harmless forms of contraception. This latter is very important because one cannot be so blind or so stupid as not to realize that a large percentage of married couples practice contraception in one form or another during various periods of their lives; and that improper harmful methods of contraception can and do predispose to a high incidence of sterility.

S. R. Meaker, in his clinic in Boston, has done more towards shedding light on the obscurity, formerly clouding this subject, than any other single individual. He finds that absolute causes occur in about thirty per cent of clinical cases of sterility. In the remaining seventy per cent this is due not to a single abnormality but to a multiplicity of factors any one of which could be of importance.

It has been demonstrated that about thirty per cent of all cases are due to the male. Local genital factors play a comparatively small part. The most common causes are: ignorance; impotence; excessive coitus; absence, scarcity of or abnormality of the spermatazoa. There are possibly many other causative factors in the male, as diet, alcoholic excesses, endocrine disturbances, etc. It is not my purpose to delve more fully into the aspects of this subject, but merely to point out that in all cases of sterility the examination should begin, in my opinion, with the male and this to be done preferably by a competent Urologist.

In the female, excluding some of the rarer conditions, the most common contributory factors to infertility are: genital hypoplasia; diseases of the cervix, producing abnormal changes in the secretions of this organ; tubal obstruction; and mechanical impediments to ovulation.

The first of these factors, female genital hypoplasia, has in the past yielded rather disappointing results as to treatment. It is possible that the newer developments in endocrine therapy may prove of assistance in the relief of these cases. At the present time the best results are obtained in the field of prevention rather than cure.

Abnormalities of the cervix have practically all their origin in infections. The old forms of operations as advocated by Dudley, Schroeder, or Sturndorf, have practically been abandoned in favor of treatment by the electric cautery; or in the more extensive conditions by conization, with the high frequency current as advocated by Hyams.

Some individuals have disparaged the latter forms of treatment, claiming that they would result in stricture of the cervix, which

would in turn render labor difficult. I have delivered many patients in whom one or other of the above methods had been used, and found evidence of stricture in only a very few; these patients, specifically, giving a history of repeated cauterizations. It has been my experience that those individuals, in whom the cauterization is done too slowly, with extensive searing of the tissues, are those in which scar tissue is produced. Too frequent repetitions of cauterizations give the same result. It is better, therefore, when the disease of the cervix is extensive, to do a conization by the Hyams method rather than repeated cauterizations.

There has been a great deal of controversy as to the part played by backward displacements of the uterus as a cause of sterility. Unless these displacements are associated with some degree of genital hypoplasia or other abnormalities, I am compelled to concur in the opinions of those who do not believe that these malpositions are a cause of sterility. I do believe, however, that retro-displacements, uncorrected in the early months of pregnancy by exercises, pessary or a combinations of these methods, predispose to abortion.

Probably the most valuable contribution made in recent years to the study and therapeutics of sterility has been tubal insufflation, as originally introduced by I. C. Rubin. In a series of five hundred sixty cases of sterility using his original technique, I have found that forty per cent showed closed tubes; and that of these, twenty per cent became permeable.

It is not intended here to repeat, but the essentials of Rubin's method. I use carbon dioxide gas for inflation of the tubes. If these show evidence of being closed, I follow this after the next succeeding menstruation, by an injection of Lipiodol, with x-ray photographs this in order to determine the point of obstruction. If the latter shows that one or both tubes are closed at, or near, the uterine insertion, future treatment, by insufflation, is useless. Should the closure be in the fimbriated portion, the prognosis as to restoring permeability by repeated insufflations or by operation is fairly good.

My preference to the gas insufflation, over the oil, is, that use of the former is simpler, less painful, and far less dangerous. Numerous reports of oil being forced into the circulation, oil embolism, etc., as compared to the very small number of accidents reported following air injections strengthen my opinion. I have had occasion to open the abdomen, in several cases, in from several months to over a year after oil injections had been used, and found evidence of peritoneal irritation, encapsulated globules of oil and adhesions. Some individuals are now using Neo-Iopax instead of oil, and claim that it is not irritating. My experience with it has been limited, but the assumption appears to be correct.

After the determination that both tubes are closed, the question arises as to the advisability of operation. This has been the subject

of arguments for many years. Many operators have published series of cases with conflicting results. I believe the consensus of opinion is now that in those cases in whom adhesions about the fimbriated extremity of the tube fail to yield to repeated injections of air by the Rubin method, operation is admissible as yielding a fair prognosis.

Numerous operations have been devised, when it was found that the obstruction was present in the interstitial, or isthmal portions of the tubes. In a recent paper, Bethel Solomons publishes the result of three hundred sixty-six cases of tubal resection. In this series thirty, or 8.2 per cent, became pregnant, and ninety-eight, or 18.5 per cent, either became pregnant or showed evidence of tubal patency; after operation. In my personal series of thirty-one cases, five per cent show patent tubes after operation, but pregnancy has not occurred in a single case.

It is my opinion, that, unless the patient is fully advised of the facts of the comparatively small percentage of pregnancies that follow these operations, even if the tubes become permeable, and in spite of these, for one reason or another, decides of her own free will upon an operation, that operations on the tubes, for the purposes alone of relieving sterility are, at the present time, unjustifiable.

With the recent studies of Frank, Novak and others, the endocrine aspects of sterility have assumed great importance. Novak's studies, revealing the rather startling fact that menstruation can occur regularly, in a certain proportion of women without the occurrence of ovulation, throws light on some of our heretofore unexplained sterilities. He believes that by studying the endometrium just before an expected menstrual flow, it can be determined whether or not the epithelium exhibits evidences of secretory activity. If it does, it denotes the presence of progestin, presupposes a corpus luteum, and therefore that ovulation has taken place. He has recently devised an ingenious hollow curette for use with suction, as an aid to securing these specimens without the necessity of hospitalization or anaesthesia.

The condition of amenorrhea associated with sterility has been found to yield, in a certain number of cases, to treatment with the various hormone of the anterior pituitary gland, although, on the whole the results have been disappointing. The various hormones have been marketed under a galaxy of names, and with extravagant claims based on animal experimentations. The results have not justified these assertions. The only product that so far appears to have very definite favourable effects, in the treatment of sterility, is thyroid extract; and this appears to be of benefit, even in those cases in whom the Basal Metabolism is normal. It is hoped that continued research in this field will aid us in obtaining more potent and reliable extracts.

Uterine fibroids are of importance as a possible cause of sterility. They occur in a surprising number of comparatively young women. In properly selected cases taking into consideration the type of tumor, its size and location, Myomectomy has been followed by a high percentage of pregnancies.

SUMMARY AND CONCLUSIONS.

1. Sterility is a disease which can be prevented by proper instruction in adolescent years.
2. A large percentage of sterilities originate in the male and treatment of the condition should begin with, or at least include that sex. This part of the examination is best conducted by a competent Urologist.
3. After prevention, the best results to date, in the treatment of sterility, have been obtained by the elimination of infections of the cervix and the opening of the closed tubes by air insufflation.
4. Hormone therapy, with the exception of those cases yielding to thyroid extracts, has been disappointing.
5. Salpingostomy yields fairly good results in the fimbriated end occlusions; very poor results when this exists in other portions of the tubes. The decision, for this type of operation, should be left to the patient after full explanation of the possible dangers and of the comparatively small percentage of pregnancies that occur as an end result.

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PRIMARY CARCINOMA OF THE LUNG.

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Primary carcinoma of the lung is tending to be diagnosed more and more frequently. Whether this is due to an apparent or to a true increase in frequency is rather doubtful. With the help of good radiographs of the chest, and with the development of endoscopic methods as applied to the bronchi, there has been noted quite a marked statistical increase. It had been stated before the discovery of the effect of liver in pernicious anaemia that this disease was geographically distributed; it was later found that the incidence was restricted to those countries where clinicians looked for it. Similarly in

carcinoma of the lung: the older clinician probably never made an absolute diagnosis of this condition; indeed, Passler in 1896 was able to collect 57 post-mortem reports only from the literature.

The etiology of carcinoma of the lung is obscure, attempts to produce it experimentally having up to the present failed. Some writers have tried to explain the recent increase in the recorded numbers by blaming petrol fumes, tarred roads, oil fumes and tobacco. The condition, however, is probably as common in South Africa as anywhere else in the world, and one has seen cases in people who have never been in a motor-car and who saw tarred roads for the first time on arriving at the Somerset Hospital for investigation.

There is one type of pulmonary neoplasm that is very definitely due to an inhaled irritant—the "Schneeberg cancer." This occurs in miners in that area, and is supposed to be due to the radio-active nature of the earth mined. Incidentally, these are the only miners in whom an increased incidence of lung cancer has been observed. It is of local interest to note that despite the pulmonary damage sustained by sufferers from miners' phthisis, no carcinogenic element is apparently involved, and there is no reported increase in lung cancer.

A pathological classification is difficult. The old "oat-celled sarcoma of the lung" is now considered to be simply a carcinoma. It will simplify matters to classify these neoplasms into (a) bronchial, and (b) parenchymal.

Bronchial carcinomata arise from the bronchial epithelium. There are various degrees of metaplasia, the commonest being a squamous-celled carcinoma. In one seen recently, the bronchial mucosa had become thickened and quite different from the normal ciliated columnar, and in the submucosa were cell nests of squamous-celled carcinoma showing prickly cells and some keratinization. Another much rarer type seen shows the appearance of a slowly growing carcinoma usually described as arising in the antrum of Highmore. Like carcinomata arising in hollow tubes anywhere in the body, these ulcers may be crateriform with everted edges, papilliferous, annular or diffuse. The commonest are the crateriform types, next the papilliferous; the annular and the diffuse are rare.

Parenchymal carcinomata may be classified as diffuse or circumscribed. The diffuse type is rare and apparently shows an extensive fine infiltration of a whole lung or lobe. The circumscribed types are clinically subdivided into hilar and peripheral to differentiate those which are more amenable to operative intervention from those which are not. Many of the hilar type are so close to the hilum as to make a lobectomy almost impossible; it is in the field of the peripheral type that one can offer some hope of success. Microscopically, these are the oat-celled carcinomata.

Males are affected about three times as frequently as females. The commonest age-period of incidence is between 40 and 60, cases as young as 20 being not uncommon. The youngest case has been reported in the last annual report of the South African Institute for Medical Research, and occurred in a child of seven months old, the case being proved by autopsy.

The lower lobes are affected in 60 per cent. of the cases, there being a slight balance in favour of the left side.

SYMPTOMS.—The *bronchial types*: Cough and sputum are noted early. The cough is early on non-productive; later, as ulceration of the surface of the growth occurs, a blood-stained sputum appears. Still later obstruction to the bronchi and infection of retained secretions behind the tumour gives rise to a foul, blood stained and profuse sputum, often indistinguishable from that seen in lung abscess and in bronchiectasis.

Bleeding is not uncommon. This is usually small in amount and intimately mixed with the sputum, but in some cases a brisk hæmoptysis is the first indication of the mischief. The hæmorrhage is commonest, as may be expected, in the papilliferous type. Occasionally a portion of the tumour breaks off and is coughed up by the patient.

Pain is characteristically absent in the earlier stages, but later, when there is bronchial obstruction, a feeling of fulness and tightness across the chest may be quite a marked feature of the disease.

The *Parenchymal types*: These are notoriously silent in character. They give rise to symptoms only because of the pressure they exert on neighbouring structures. Should they press on one of the larger bronchi, an intractable and distressing cough which is early on non-productive is the result; later, purulent retained secretions are brought up as sputum. The pressure may be on any of the endothoracic structures, and there may thus be dyspnoea from pressure on the trachea, hoarseness from pressure on the recurrent laryngeal nerves, Horner's syndrome from sympathetic and shoulder pain from phrenic pressure. Should the tumour be peripheral in its situation, very few of these symptoms may be noted, and these only late in the disease. In these varieties there develops an intercostal neuralgia from extension to the chest wall itself; and Edwards describes one case in which the first symptom was a pathological fracture of a rib as a result of erosion due to pressure.

The Signs.—Should there be bronchial obstruction, atelectasis or emphysema will be found behind it, depending on whether the obstruction is complete or incomplete. Parenchymal tumours, however, may attain the size of coconut and give rise to pressure symptoms in a marked degree without any signs being apparent. When extension to the pleura occurs, a pleural effusion, often blood-stained and occasionally containing tumour cells, is a frequent

finding. Dullness and diminished air entry are, as may be expected, found over the solid masses.

X-RAY.—*Bronchial types* show as areas of increased density radiating from the hilum of the affected lobe. Should obstruction be present, atelectasis or emphysema may be noted together with displacement of the mediastinum towards or away from the affected side respectively. In some cases the bronchial obstruction may be associated with an infection of the choked portion of the lung, and a bronchiectasis or a lung abscess may be seen. Indeed, so common is this latter occurrence, that Ivanissevich and Ferrarri have noted that out of 32 patients with cancer of the bronchus fifteen had been sent in with abscess of the lung. They submit that every non-tuberculous person with cough, expectoration and hæmoptysis should be examined bronchoscopically.

Parenchymal growths show as circular shadows in the substance of the lung. If they originate near the mediastinum or near the peripheral surface of the lung the circle is imperfect, but if they originate in the middle of the lung tissue, they tend to acquire a spherical shape. They must be differentiated from hydatid cysts of the lung—usually a process of elimination—and from neurofibromata—spherical tumours arising from the sympathetic chain. A lateral view of the chest helps to exclude these latter, as they are invariably visible on the lateral radiograph lying posterior to the vertebral column, while the parenchymal lung cancers usually lie in front. A diagnostic artificial pneumothorax followed by an X-ray will also often help to distinguish these two.

Lipiodol Bronchography.—This demonstrates bronchial occlusion and the relation of the tumour to the bronchi. In a case seen recently, a complete left bronchial occlusion was demonstrated by the fact that the right base filled on instilling the lipiodol with the patient lying on his left side. This was confirmed by post-mortem.

Bronchoscopy.—In the bronchial variety this is the decisive method of investigation. By the time hæmoptysis is apparent some ulceration must have occurred, and the tumour, if present in any of the larger bronchi, will be visible to the trained eye. The bronchoscopic appearances vary from typical carcinomatous ulceration to small polypoid protuberant masses. It is always advisable, and usually possible, to take a piece for microscopic section, and the final diagnosis rests on this.

The *Prognosis* is bad. It is estimated that on an average a six-month survival from the date of diagnosis to the time of death is, in the untreated cases, all that may be expected.

Metastases occur, according to Maxwell and Nicholson, in the mediastinal glands in 82 per cent, in the cervical glands in 28 per cent, in the abdominal glands in 41 per cent, liver 33 per cent, suprarenals 20 per cent. and brain 11 per cent.

TREATMENT.—*X-ray Therapy:* In marked distinction to the mediastinal neoplasms of lymphatic origin, the lymphosarcomata and the lymphogranulomata of the Hodgkin's type, the effect of deep X-ray therapy on pulmonary neoplasms is uniformly disappointing. Only one case is noted by Tudor Edwards as having shown some improvement, and this patient died eleven months after the disease had been diagnosed.

Radium: The use of radon seeds in special containers has been attempted. Edwards describes these and the effects. One case is alive and well three years after the treatment had been instituted, but the majority of the thirty-two patients so treated had died of their disease.

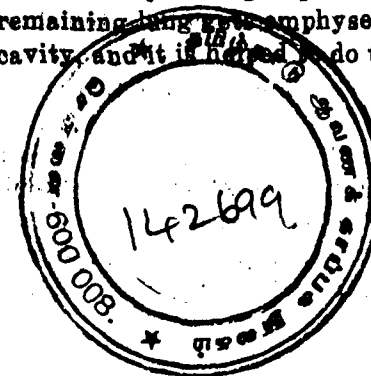
The insertion of radium needles into bronchial carcinomata is fraught with difficulty. It is not practicable to insert the needles through the wall of the bronchus owing to the grave risk of perforation and infective mediastinitis or empyema. Some method must therefore be devised to maintain the radium against the carcinoma for definite periods of time. In addition, the alpha and beta rays must be screened with appropriate filters, the bronchus must not be obstructed, and there must be no risk of coughing up the apparatus or of its slipping down towards the lung periphery.

Lobectomy: In tumours limited to one lobe a successful lobectomy has often been performed. The operation is technically not very difficult, the pre- and post-operative management being of major importance. A wide exploratory thoracotomy is performed, the affected lobe is isolated, two special snares are passed around its hilum, and the latter is divided between the two snares. The vessels may be caught singly or may all be included in interlocking mattress sutures. The bronchus is included in the interlocking sutures. The chest is closed without drainage after the stump is inspected for leakage of air or of blood.

The immediate post-operative dangers are leakage of air, causing mediastinal emphysema or a tension pneumothorax or bleeding. The more remote dangers are infective mediastinitis or empyema.

Pneumonectomy: If the growth is so situated that the main bronchus is involved, a total removal of the lung may be done. Overholt reports eight pneumonectomies with six successes. The remaining lung is emphysematous and tends to fill the entire chest cavity, and it is necessary to do this by subsequent thoracoplasties.

S. A. Medical Journal, July 1936.)



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ASTHMA.

H. KENNETH SCATLIFF, M. D.

Chicago.

The ghastly picture of the victim of an asthmatic attack struggling for his breath is so familiar to all of us that we need not introduce this subject with a definition.

In considering the advisability of presenting a paper on the subject, it was suggested that it would be worthwhile if I could give you something *new*. A survey of the methods of treatment of this condition brings the thought to mind that there is no short cut to success in the treatment of asthma. Its synonym still remains "the most mismanaged disease." But I can, and I do, emphasize something quite *old* in this connection and that is—the etiology.

Here at Ravenswood Hospital (and I must acknowledge the value of our library and the help of our librarians in making this material available) we have accumulated about 55 cases for study. We find in this series allergic causes; non-allergic causes, such as chronic bronchitis, pulmonary tuberculosis, cardiac disease, renal disease, enlarged bronchial glands, etc.; and non-specific exciting causes, such as damp or cold weather, dust, smoke, or irritating gases, reflex influences from nose and throat, gastrointestinal tract or liver. We have excluded some cases because of insufficient stay in the hospital for proper evaluation of the findings and others because essential laboratory procedures are missing.

About 60 per cent of the patients studied were between thirty and sixty years of age, and there was an almost equal division by sexes—one less male, in fact. (Table 1). About 42 per cent of the cases were uncomplicated bronchial asthma, 18 per cent were complicated by a cardiac or renal lesion, 16 per cent had other lung involvement, i. e., tuberculosis, bronchiectasis or chronic bronchitis. It is interesting to note that 12 per cent manifested some skin lesion, as eczema, urticaria or similar condition. The other 12 per cent had some pathologic condition of the nose and throat. (Table 2.) Another noteworthy feature is the surprisingly large number who had had a previous influenza, pneumonia or respiratory tract infection. Of the cases of true bronchial asthma, practically all were found to be allergic to something with which they came in contact, or their history suggests that angle.

The asthmatic patients seen at this hospital are, in the main, those who are well along in their disease, those who are in extremis, or those who come in for relief when their symptoms are the most severe; but this analysis shows that it is in the field work—among those patients who come to our offices or whom we visit in their

homes—that we can best benefit the patient by an early consideration of the etiologic factors.

Our percentage for allergic causes is slightly lower than that usually given by other students of this subject, who tell us that over 50 per cent of their cases present an allergic phase as an etiologic factor, as opposed to our 42 per cent. This difference is probably accounted for by our age incidence, most of our cases being in the middle age group, as mentioned above. It is emphasized for us, therefore, that the allergic causes are to be expected in the younger age groups, i. e., below the ages of 30-35 years. Above this age, or above the ages of 35 to 40 years, we look for the bacterial infections, the non-allergic causes and, especially above the age of 50 years, should we be on the alert for those cases for which cardiovascular and cardiorenal changes are responsible. Of course, these statements are general. They can hardly be otherwise when we consider that the asthmatic patient who starts with a single cause or a single group of causes for his ailment has soon, by the very nature of conditions, developed complications which make it difficult to decide which is the cart and which the horse in this sequence of physiologic and pathologic changes occurring as a result of repeated attacks. We must constantly bear in mind that one type of asthma (again speaking etiologically) may be superimposed on or associated with another type of asthma. And these very generalities teach us that a careful, searching history is the only safe starting point for an investigation which will call for tests for hypersensitivity; laboratory tests of the blood (eosinophilia), the sputum (Curschmann's spirals, Charcot-Leyden crystals, bacteria) and urine, or for an electrocardiographic study of the heart or an x-ray study of both heart and lungs.

I will omit the details of specific skin tests for sensitivity but merely emphasize that while the tests can not be omitted for accurate information they are undertaken only after the careful history, of which I have spoken, is taken, and then considered in conjunction with all other findings.

To most of us the term "asthma" means a spasmodic contraction of the bronchioles, lasting from a few minutes to a few hours. But there is a definite change in the physical economy of the allergic asthmatic. One of these changes is so definite and so constant that it is almost pathognomonic. I refer to the eosinophilia in the blood and in the sputum. This exists and must co-exist with a further infiltration of the eosinophiles in the peribronchial tissues or we have not a true bronchial asthma. On the other hand, not all cases of asthma are allergic in type, and it is this point which I wish to emphasize; namely, that we must determine which is allergic and which is not, or we do not treat the patient fairly nor our own intelligence with respect.

Bacterial infection may readily cause a bronchial stenosis and a consequent asthma. In fact, work is going forward now at Guy's Hospital in London attempting to evaluate the asthmagenic properties of Friedlander's bacillus. In the 1932 report of the Asthma Research Council they assert ". . ." there is evidence that injections of Gram-negative organisms of this type (Friedlander) produce much greater changes in the body chemistry than injections of Gram-negative cocci."

In regard to the pathology of asthma, we can hardly do better than to peruse the work of Koessler and Huber in which they survey the literature relative to this angle from 1886 on. I refer to it here briefly that proper credit be given for their investigations. Their almost uniform finding was that the actual thickness of the walls of the bronchioles was definitely increased as compared with similar structures in non-asthmatic patients.

There are other pathologic findings which vary somewhat; such as, the filling of bronchioles with mucus, the presence of strings of tightly wound fibrin (Curschman's spirals) in the bronchioles. Almost invariably there is more or less infiltration of small, round cells in the mucous, muscular or glandular layers. The glands, while usually hypertrophied, may be secondarily atrophied; the muscular layer is usually increased in thickness. However, the one feature which remains most helpful, in my opinion, in converting the pathologic findings to an understanding of the etiology is the picture of the eosinophilia already mentioned.

Not so long ago the thought was advanced that these eosinophiles were autochthonous; that is, they were formed in the vicinity of these sick and distended bronchioles. Now, however, I believe the pendulum is swinging away from that viewpoint. But no matter where they are formed, whether autochthonously or in the long bones, they indicate, when present, the allergic character of the disease. If they are absent consistently in repeated examinations of the blood and the sputum, it means that the asthma is produced by a non-allergic cause or that the "reactability" of the patient is very, very low.

Now, just a few words about treatment. First of all, I believe the asthmatic should be treated between attacks. I do not believe that the dyspneic crisis of asthma is the whole picture any more than the convulsive seizure of epilepsy represents the beginning and end of that disease. The patient must be gone over very carefully and as many of the etiologic factors isolated and subsequently eliminated as is possible. In all cases, both in the hypersensitive asthmatic and the non-sensitive asthmatic, an attempt should be made to improve the general and mental hygiene. The mental hygiene because they are all apprehensive; therefore they should be taught to avoid emotional crises and over fatigue. The first consideration

in the non-sensitive case is the search for and removal of possible infective foci. If present, the advisability of using an autogenous vaccine from that source or from the sputum can be considered. Or the possibility of x-ray treatments over both hili and the spleen. The hypersensitive individual is treated either with the specific protein or, if the bacterial infection is most pronounced, with a stock vaccine. I have found solutions of peptone, milk, or typhoid vaccines of little value. If it is necessary to start treatment during or shortly after an acute flareup, I follow the intracutaneous route, using one-tenth the dose usually given subcutaneously. The intracutaneous method is used because there may well be a characteristic change in the reticulo-endothelial system of these individuals, as some workers hold. At any rate, all of these patients present a greater permeability of their mucous surfaces.

On the hypothesis that these patients possess an alkalosis, I have prescribed a ketogenic diet. I have followed such a diet myself and have had others do so and I have been greatly disappointed. That also is true of the capsules some of the pharmaceutical houses have put to promote a mild acidosis. These individuals do seem to do better, however, if their blood sugar is kept low or they are given enough exercise to burn up their excess glycogen.

As for the attack: I have lived through the time when all of these patients were given a "shot" of morphine and atropine and a prescription for potassium iodide or were given stramonium leaves to burn. Then, when epinephrine was introduced every doctor thought he had discovered something. I believe that smaller doses (.5 to .8 c.c.) of epinephrine, repeated if necessary, are better than larger doses pushed to the point of causing hyperirritability of the nervous system. I frequently add about one-third of the total dose (.3 to .4 c.c.) of pituitrin to the adrenal extract. I believe I get longer relief from less dosage. I have given epinephrine by mouth, by rectum and by inhalation, all without a great deal of effect. The latest method of giving it in an increased strength of 1:100 by inhalation is quite effective, however. But it has the one decided disadvantage of taking the medication out of the doctor's hands and permitting the patient to use a powerful agent promiscuously. I have had patients do this and become apparently "epinephrine fast," that is, it takes larger and larger doses to obtain a questionable amelioration of the symptoms.

Under these circumstances I have given fairly large doses of sodium iodide intravenously. I have given large doses of sodium chloride (3-6 gm. in 240 c.c. of water) after the manner of the Pottengers in California, and I have used helium gas in an oxygen tent. This last measure is in partial accord with the practice of Barach of Columbia University, who developed the therapeutic use of helium; and it was resorted to in desperation for a patient

having what we might call a "status asthmaticus" in which epinephrine was not effective. The success achieved in this method is probably due in great part to the enforced rest and supportive treatment.

A word or two about helium might not be amiss. Helium is a light gas and, so far as known, is as inert in the body as is nitrogen. A light gas favors aeration of the lung by more ready and greater diffusion and by the mechanical displacement of the heavier air during expansions and contraction of the chest wall. There are certain difficulties in its use, however. For instance, helium costs six or seven times as much as oxygen. Again, it is hard to keep in captivity. Being a light gas, it escapes readily through a small leak. It is used in the proportion of three or four parts of oxygen to one of helium. For the greatest benefit, it should be used in a rebreathing apparatus, and Barach suggests it be given with a pressure of 8-15 cm. of water. There is a report of its use at the Mayo Clinic by means of a closed oxygen tent; that is, the lower part was closed about the neck of the patient with a zipper-like arrangement. I believe that the use of this gas in this type of patient will be very beneficial and that it will contribute much comfort to the asthmatic.

Another medication I have found helpful in prolonging the effect of the epinephrine is histidine, using three or four doses at three hour intervals. Apparently it has the ability to stimulate the activity of the adrenal glands in the individual. Care must be used not to push the dosage too far because an excessive dosage produces a hyperirritability similar to that caused by an excess of ephedrine. For that reason I do not use it in the asthma-free interval. Ephedrine I have found in general to be somewhat less useful than adrenal extract. To get away from its adverse effects it is frequently desirable to add $\frac{1}{4}$ to $\frac{1}{2}$ gr. of phenobarbital.

To summarize: I would emphasize the careful search for all possible etiologic factors, underlining them in the history in the order of their apparent significance. I would be guided in this search by a careful, painstaking history, considering age at onset, hereditary, seasonal appearance, physiologic coefficient of the cardiovascular, cardiorenal apparatus; and, when it comes to treatment, I would treat the patient and not the attack alone.

TABLE 1—CLASSIFICATION BY AGE AND SEX

Age Groups	Male	Female	Total
Birth to 10 years	2	2	4
11 to 20 years	...	2	2
21 to 30 years	3	3	6
31 to 40 years	4	6	10
41 to 50 years	7	4	11
51 to 60 years	6	3	9
61 to 70 years	2	6	8
71 to 80 years	1	1	2
81 years and over	2	1	3
Total	27	38	55

TABLE 2—COMPLICATIONS

Complicating Conditions	Patients	
	No.	Per cent
Lung	8	16
Nasal	8	12
Cardiovascular and Renal	10	18
Skin (Eczema, etc.)	7	12
None recorded	23	42
Total	55	100

(Illinois Medical Journal, July 1936.)

Extracts

A CLINICAL STUDY OF THE EFFECT OF CAMPHOR-IN-OIL ON LACTATION.

BY MILTON D. KLEIN, NEW YORK, N. Y.

American Journal of Obstetrics and Gynecology, page 894.

Ninety out of one thousand postpartum cases were studied regarding the effect of camphor-in-oil on the breasts at various periods following delivery. When given within twenty-four hours after delivery, eighty per cent of the patients failed to develop engorgement. Given after twenty-four hours and before engorgement developed beyond the first degree stage, inhibition took effect within six hours and the breast returned to the normal stage shortly thereafter.

"When the breasts exhibited a second degree reaction before treatment was instituted, the use of camphor-in-oil prevented extension of engorgement to the third degree stage. When camphor-in-oil was given after the breasts reached the second or third degree reaction, the duration of breast engorgement was shortened to twelve hours instead of thirty-six hours. Furthermore, regression to the nonlactating phase was complete within two to three days instead of the usual four or five days. It is therefore evident that the earlier the injections are started, the less the degree and duration of the engorgement, and the quicker the breasts return to their dry state.

Since the writing of this paper, fifty additional patients have been given larger doses of camphor-in-oil (three gr. twice during

first day) with results that seem to be more effective in prevention of lactation.

CONCLUSIONS.

1. Intramuscular camphor-in-oil is an effective method of treatment for relief of breast engorgement.
2. Camphor-in-oil given intramuscularly was found to inhibit lactation.
3. The sooner the injections are started postpartum, the more effective is the action.
4. No marked general or local reactions followed.
5. The advantages of this method over binders, catharsis, sedation and restriction of fluid intake, are that it is more effective, simpler and less disturbing to the patient."

The procedure followed was that advocated by McNeile.

"Two doses of camphor-in oil, $1\frac{1}{2}$ gr. each, were given intramuscularly (into the buttocks) the first day (in morning and afternoon). One injection of $1\frac{1}{2}$ gr. was then given daily for three successive days, making the total number of injections five. The use of cathartics, ice bags, binders, and restriction of fluids were avoided except in the few cases where it was obvious that therapy failed. All breasts were examined every twelve hours for the first forty-eight hours, every six hours for two days and daily thereafter."

Wendell Long.

CHRONIC TONSILITIS IN THE ADULT.

HUNNICUTT, JR., *Sternstein and MacMahon, Boston. Archives of Otolaryngology, December, 1935.*

There is a variety of opinions as to what constitutes clinically chronic tonsillitis. The effect of the infection on certain systemic diseases as well as the upper respiratory tract and the subsequent course of the interrelated disease after removal of the tonsils equally debatable. An attempt was made by the author and associates to clarify this situation somewhat by taking twenty-five patients with a diagnosis of chronic tonsillitis and making a clinical, bacteriological and pathological study of them. Tonsillectomy had been recommended in these consecutive cases. The diagnosis of chronic tonsillitis was made on one or more of the following points: repeated attacks of sore throat, with or without systemic reaction; a history of frequent or periodic sore throat in patients with disease commonly

attributed to local infection, such as various types of arthritis, muscular rheumatism and conditions presumably of toxic origin; and the presence of capillary infection in the faucial pillars and tonsils, together with the appearance of a purulent tonsillar exudate. Patients with infected teeth or sinuses were not included in this group.

In the group studied there were ten men and fifteen women; age from twenty to fifty-seven years; twenty-four gave history of long-standing frequent and periodic sore throats with eleven of them having intermittent attacks of acute tonsillitis; twenty of them had associated head colds; in eight there was history of cervical lymphadenitis; seven patients complained of productive cough and two of a dry, non-productive cough; in seven there had been disorders of the ears, three with chronic progressive deafness and four with tinnitus; and fourteen gave history of one or more of the associated systemic diseases. Size, appearance of the surface and the exudate, were the points considered in the clinical examination of the tonsils. It was found that there was not any constant relationship between the clinical findings and the clinical history.

In the bacteriologic studies the cultures were made of material taken from three sites: the surface of the tonsils before operation; the depths of the enucleated tonsils directly following removal, by searing and puncturing the surface; and the tonsillar fossa after healing. The results showed micrococci catarrhalis to be the organism most frequently found while staphylococci and non hemolytic streptococci were the next in frequency, respectively. The organisms of greatest preponderance in the tonsil had no constant relation to the gross appearance of the tonsil nor to the clinical signs and symptoms.

For the control for the series of twenty-five patients, tonsils were removed at autopsy from adults who had had no recent clinical signs or symptoms of infected tonsils. The pathological examination of the series of twenty-five showed a variety of findings but no more variable than that found in the control group. There was one case of rheumatic fever following scarlet fever. With this exception, the histologic changes did not bear any definite relationship to the bacterial flora or to the clinical signs and symptoms. The author says: "The problem has not been to prove that all cases in which there is a clinical diagnosis of chronic tonsillitis warrant a similar histologic diagnosis but rather to demonstrate the variety of changes which may be found in the tonsil of the patient whose condition is diagnosed in the clinic as chronic tonsillitis."

PERFORATED ULCER OF STOMACH: DIAGNOSIS AND TREATMENT.

BY ANTONIO BELLEROSE, F. R. C. S. (CANADA).

Chirurgien de l'Hôpital Notre Dame, Montreal. L'Union Medical du Canada, April, 1936.

This article is a brief and definite summary of the facts touching the symptoms, signs and treatment of perforated gastric ulcer.

In general, these symptoms and signs are: A sudden violent pain above the umbilicus with an invincible contraction of that portion of the abdominal wall. If there is a history of preceding symptoms suggestive of ulcer of stomach, there can be little doubt about the diagnosis.

The sudden violent pain is practically always in the epigastrium at first. After the lapse of some time it extends into other parts of the abdomen.

The contraction of the muscles is so marked that the outlines of the recti may be seen in thin subjects. Palpation always reveals the intense muscular contraction, the maximum being in epigastric area.

Respiration is thoracic in type.

In ninety per cent of patients there is a history of gastric disturbances, like pain some time after meals, vomiting, occasionally hematemesis. In ten per cent the history of previous disturbances is vague or absent.

Other signs of importance are disappearance of liver dullness and the radioscopic revelation of gas between liver and diaphragm.

The treatment advised is a simple suture of the perforation, with drainage of the gastro-hepatic area, and, in late cases, of the lower abdomen or pelvis.

Attention of directed to the all-important fact that the surgical treatment of a perforated gastric ulcer is an emergency operation and that the prime necessity is closure of the perforation without gastro-enterostomy or any other additional operation.

The prognosis bears a very distinct relation to the time the perforation has existed before operation. It has been established by bacteriological examinations of the exudate that virulent pathogenic bacteria are practically never present within the first six hours, and if simple suture is done during that time the immediate results are nearly always good, and in the case of many patients there is no further difficulty, provided there is sensible and wise discretion in connection with food and habits.

Bellerose reports nine cases which are illustrative of his position relative to treatment as well as of the clinical picture before operation.

COMMENTS: In connection with the symptoms and signs of perforation of a gastric or duodenal ulcer, the graphic formula of Moynihan should be remembered: "Sudden agonizing pain that does not abate, a board-like abdomen, shallow respiration, an anxious countenance."

It might not be out of place to say a word about one of the details of operation. As a rule, one would do better not to employ a purse-string suture for closing a perforation, and this is particularly true if the margins are firm. By and large, we believe that the uniform employment of through-and-through sutures, either interrupted or continuous, is much better, and there should be sufficient "bite" so that they will not cut through in handling and tying.

LeRoy Long.

THE ETIOLOGY OF CHRONIC ARTHRITIS.

BY CHERTES S. KEEFER.

New England Medical Journal CCXIII, 644, 1935.

The author classifies arthritis as follows: degenerative arthritis, commonly called osteo-arthritis or hypertrophic arthritis; and rheumatoid arthritis, commonly called infectious or atrophic arthritis.

Although the actual etiology of the arthritis is unknown, the author offers the following as the most likely theories.

Degenerative arthritis is due to injuries, excessive wear and tear, or trauma to the articular surfaces. There are three possible theories in regard to the etiology of rheumatoid arthritis.

1. The unitarian theory in which both the rheumatoid and degenerative types are thought to be due to the same etiological agent or groups of agents. The factors which determine the type of arthritis are trauma, focal infections, menopause changes, and habits of the patients. This is thought to be true by many authorities, as there are so many mixed types of arthritis pathologically.

2. Infectious theory. This is thought possible because of the inflammatory symptoms and the fact that there are often found positive agglutination and precipitation reactions to hemolytic streptococci. This theory has also three possibilities within itself: (a) metastasis from a focus of infection; (b) toxins absorbed from a focus of infection; (c) reactions of bacteria or their end products on some sensitized tissue.

3. The eclectic theory in which there is considered an imbalance of the nervous, gastro-intestinal and peripheral nervous systems. Gastro-intestinal disorders are commonly found with a decreased acidity, but the author does not feel that there is any definitely

convincing etiologic back-ground connected with it. Very seldom does one find vascular changes in a synovium in the joints. There is rarely any connection between Raynaud's disease or scleroderma and rheumatoid arthritis. The author does not believe that there are any results obtained by sympathectomy.

In conclusion, the writer states that, although there are no definite etiological facts, there will be a better understanding of the etiology as soon as there is a better understanding of the typing of the disease.

Medical News and Notes

SALEM MEDICAL ASSOCIATION. A meeting of the District Medical Association was held on 28th March in the premises of the Government Headquarters Hospital, under the presidency of Major A. C. Alagappan, District Medical Officer and President of the Association. Dr. S. Valeesvaran spoke on "Eye in General Practice". Major Alagappan treated the members to tea party. Dr. S. Krishnamurthi Rao, Secretary proposed a vote of thanks.

BOMBAY MEDICAL UNION. A Special General Meeting held on 31st March 1937 to consider the Recent Communique of the Government of India of 25th March 1937, regarding the Scheme of Re-organisation of the I.M.S., the following resolutions were passed :—

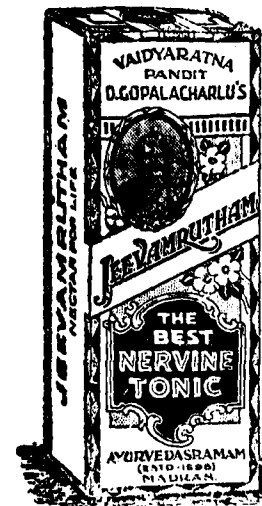
(1) The Bombay Medical Union condemns unequivocally the policy of so called Re-organisation of the I.M.S., as announced in the recent Communique of the Government of India, 25th March 1937.

In practice this policy means perpetuation of the European element in the service and elimination of the Indian element.

(2) The Bombay Medical Union hereby reiterates its oft-repeated demand for the complete abolition of the Civil side of the I.M.S.

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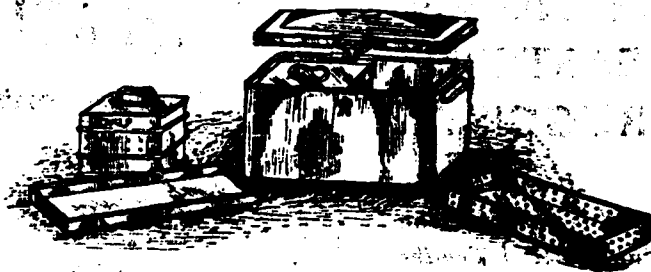
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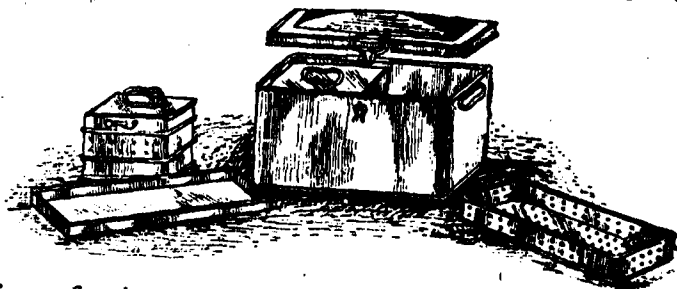
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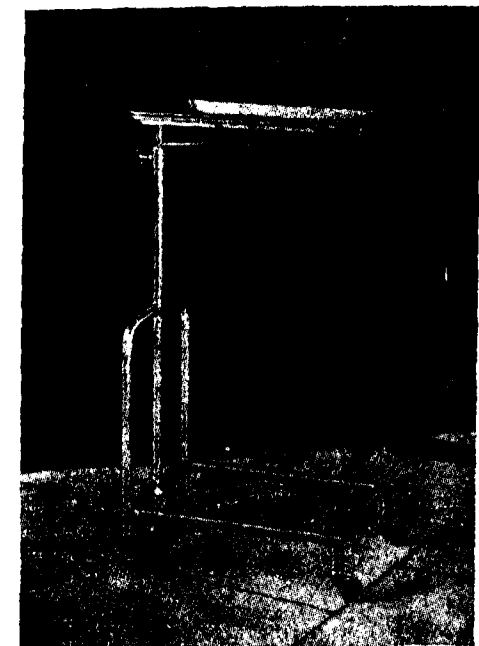
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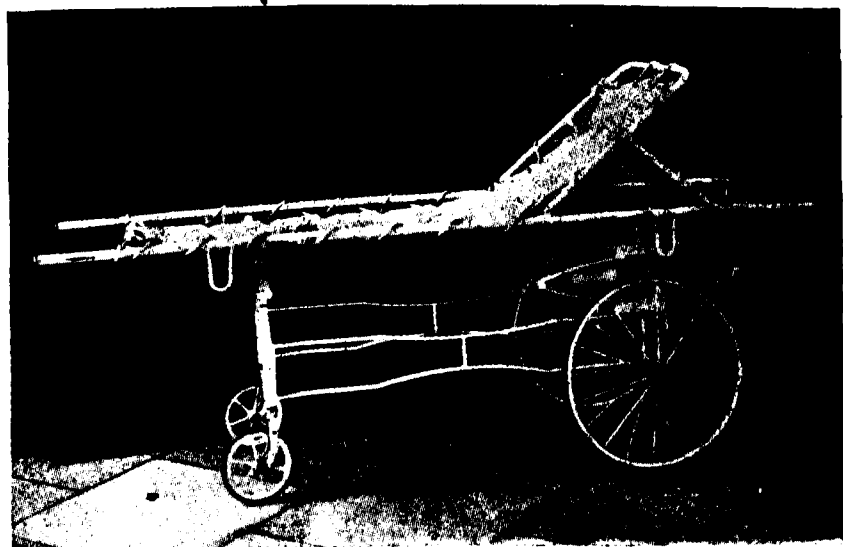
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