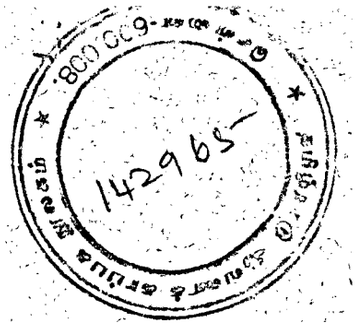

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304

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MEDICO-SURGICAL SUGGESTIONS

VOL. VII APRIL 1938 NO. 4

WHOLE SUPRARENAL GLAND: A USEFUL THERAPEUTIC AGENT.

BY ORVILLE BARBOUR, M.D.

Peoria, Ill.

My experience with suprarenal gland as a therapeutic agent covers a period of seven years, and involves more than 2,500 clinical cases. It includes a variety of conditions, many types and degrees of cases, in many kinds of individuals of various ages, under a variety of dietary, climatic, and other environmental factors. The products of several different firms have been used. Different dosages have been tried until the more effective ones were found.

As my experience during this study increased, I found it necessary to discard some early interpretative impressions. On the other hand, certain observations recurred so consistently with such a variety of patients, under such varied conditions, and continued to occur as time went on, so that certain beginning impressions gradually established themselves as convictions. It is those clinical observations which have stood the test of repetition and time which I choose to present in this report.

PRIME ESSENTIALS.

Obtain a potent product. Anyone who has had any clinical experience with endocrine therapy is well aware that one's results depend very much upon the potency of the product administered. Take thyroid for example. There can be no doubt but that the effects one obtains from thyroid treatment depend very much upon whose preparation is being used. I have found this to be just as true of the adrenal gland products. With some, one will observe little if any effects. Whereas, with a potent preparation, the promptness and definiteness of the results can leave little doubt in observant minds as to its effectiveness.

Optimal dosage. To obtain satisfactory results with any given remedy one must find the best dose for each patient. Enough to furnish the desired maximum benefits, and at the same time being careful not to prescribe more than enough, to avoid untoward or perhaps injurious effects. This, of course, should be kept in mind with suprarenal gland therapy, as well as with any form of treatment.

A reasonable conception of neurohormonic activities. The more one knows about physiology and biochemistry the better will be one's therapeutic results with his patients. Accordingly, the better one may understand the vegetative nervous system the more capable will he be to make use of suprarenal gland or any other endocrine form of treatment. The more will he know what reactions to anticipate, the more intelligently may he interpret the effects, and naturally, the more able will he be to obtain desirable results. One cannot hope to expect the utmost benefit from any therapeutic agent, no matter how potent it may be, unless it is applied intelligently.

RESPIRATORY DISORDERS.

Coughs. With the exception of codein, I have found no drug which is as dependable for controlling distressing coughs as is the adrenal gland material. At times codein will relieve coughs on which the suprarenal gland seems to have no effect. On the other hand, at times the adrenal material promptly relieves certain coughs which codeine or atropine do not affect. Occasionally when a cough fails to respond to either of these remedies, one may obtain the desired relief by combining the suprarenal preparation with iodine or thyroid. The glandular treatment appears to be especially effective with the spasmodic type of coughs. I say glandular treatment advisedly. Because at this writing one can hardly say whether the action of the adrenal substance is that of hormones, or of drugs.

In all, some 1450 cases with disturbing coughs have been treated. (For practical purposes and for the sake of clarity, throughout this paper, when quoting figures I will resort to round numbers rather than cite exact figures). The coughs treated were in 650 cases those of acute naso-pharyngitis in 300 of acute bronchitis, in 150 of chronic nasopharyngitis, in 70 of chronic bronchitis, in 100 of measles, and in 250 cases of whooping cough.

With the exception of the cases of measles, all of them were relatively afebrile in type. Many if not most of the conditions that are discussed in this article are apt to be associated with relative hypoglycemic or vagotonic conditions. That is one of the reasons why, except for measles, I have deliberately avoided using the suprarenal or thyroid gland in pneumonias or any other diseases which may have associated with them, hyperpyrexia. hyperglycemia or any other probable manifestation of increased metabolism. I have tried the adrenal material, never the thyroid, in 100 measles cases earlier in this study because there seems to be certain peculiar likenesses between measles and pertussis cases. Although this remedy did appear to control the coughs, and the patients did seem to do well, I discontinued its use in measles until increased information might more justify its use in such conditions.

With the coughs of the other disorders named, however, I am increasingly convinced of the value of the suprarenal gland therapy.

I have seen it check promptly so many coughs either at their beginning or later after other measures had failed, that I can feel no other way about it. After seeing quite a few patients with histories of persistent disturbing coughs of weeks or months duration, whose coughs promptly abated and soon disappeared following the introduction of the adrenal gland treatment, one can hardly help but believe in the effectiveness of this treatment.

With whooping cough one cannot depend upon the suprarenal gland as much as he may with other coughs. In some cases, one may need to resort to other measures for a time or perhaps altogether. However, the adrenal material does give more relief in more cases, than has any other palliative remedy in my hands. Its effectiveness can better be demonstrated in late cases with a persistent cough. It has been said that late cases are better testing grounds for proving the benefit of any palliative measure in pertussis. Early cases may have been mild without any treatment. All in all, I appear to obtain better results with my whooping cough cases by giving them serum or vaccine, and suprarenal gland or whatever remedy may seem indicated in individual cases. Usually when the endocrine therapy proves to be unsatisfactory I have found that phenobarbital or perhaps iodine especially in the form of calcium iodid usually will give the desired relief.

Rhinitis (Vasomotor). I learned early in this study that adrenal gland combined with iodine or thyroid appeared to relieve the nonspecific snuffles of infancy. I also observed that the same treatment seemed to relieve the afebrile "colds" of infants. Furthermore, I had noticed that in those cases which were being treated for their coughing, the frequently associated discharging noses seemed to clear up with the disappearance of the coughs. I could not resist the temptation to try to find out what the glandular therapy might do with the "colds" of children. Although, these cases seemed to do just as well as did those of the babies, like I have heard Dr. Brennemaun remark about certain methods of treatment, I hesitated to believe my own observations. The ordinary head "cold" being a self-limited disease, I felt that I could not be sure of any apparent effects. However, gradually it dawned upon me that some of these patients particularly the allergic ones were returning with "colds," and that they seemed to respond to the endocrine treatment as well as they did before. Later on, a few of the mothers told me that their children were not having so many "colds" and that these "colds" were less severe. I found from my records that this improvement was also true of others. What was still more convincing to me was that a chronic vasomotor rhinitis in a few patients cleared up following treatment with the adrenal and thyroid glands. In all, this method of treatment was studied in some 300 cases of acute rhinitis, and in 100 cases of chronic or recurrent rhinitis. I feel that the

result obtained furnish sufficient justification for further observations with the glandular therapy in this kind of conditions. I am reporting them for what they may be worth. I should point out that the results with the endocrine treatment in a few cases of hay-fever were disappointing. Some relief was obtained in certain cases but nothing like that which is seen with the other types of rhinitis.

Laryngeal Stridor. Judging from an experience with 40 cases of croup or laryngeal stridor of infants or children I believe that suprarenal gland may prove to be as effective in such conditions as is any other therapeutic agent of to-day. These conditions usually being so acute and perhaps self-limited, the results of any treatment are difficult to evaluate. Only further trial can decide the question.

Asthma. One or more attacks of dyspnea or asthmatic bronchitis has been treated with the adrenal gland in 130 cases. I have found it to be as effective if not more so than any other remedy which may be administered by mouth. When it fails, epinephrin given hypodermically will usually prove to be necessary.

Suprarenal gland seems to be very helpful in assisting in curing asthmatic individuals of repeated attacks. By continuing the daily administration of the adrenal gland and with it thyroid or iodides for as long as may seem indicated along with appropriate corrective and dietary measures one may apparently expect a cure of many of his children patients. At least I have found it so in 40 cases. The extent of one's success in individual cases depends a great deal upon the nature of the co-operation one receives from the attendants.

GASTROINTESTINAL DISORDERS

Vomiting (spastic). In those cases of pylorospasm of infants which do not promptly respond to atropine or phenobarbital, one may anticipate relief from properly administered suprarenal gland in practically all of his cases. At least I have found it so in 60 of them. This is no place for a discussion of how much pylorospasm has to do with the vomiting of congenital pyloric stenosis. But this I do know, since 1929 *none* of my cases of congenital pyloric obstruction have required surgical intervention for relief. I began this study in January, 1930. Perhaps it is a coincidence. Time will tell. Most of these cases were relieved at home. The few that were hospitalized for lavages, gavages and closer observation were home within a few days. None of them, that is of those which were seen early, went through a critical period of anhydremia. One shouldn't have to wait for results with the endocrine gland therapy. If, providing the feedings are reasonably correct, a satisfactory improvement has not occured within 24 hours, one should increase the dosage, or add iodine or thyroid to the medication. So far, with such a plan I have not had a failure with this kind of cases.

Colic (Infants). The results following adrenal gland administration in uncomplicated gastrointestinal colic of infancy are not so striking as are those in pylorospasm. Phenobarbital in some cases may serve better. However, one may encounter cases which do not respond to phenobarbital or other remidial measures, in which suprarenal gland may seem to supply the needed adjunctive help.

In 150 cases of colic in infants, I have apparently obtained satisfactory relief with the adrenal material alone or as an adjunctive remedy. In these cases one needs to pay close attention to the bowel function. If the bowels are free, suprarenal gland is indicated. If the patient should be constipated, one may find it advisible to also give atropine, iodine, or thyroid.

Diarrhea. The adrenal gland seems to have as much of an antispasmodic action upon the intestinal tract as it does upon the pylorus. I have found it a satisfactory agent in checking or assisting in checking frequent loose stools in 200 cases of diarrhea in infants and children. The suprarenal preparation alone or with bismuth has been far more effective in my hands than has the raw apple or any other method of treatment. Nor does the diet need to be so drastically restricted with this method. McLean and Sullivan have reported similar experiences with cortin.

CIRCULATORY DISTURBANCES

Cyanosis. In idiopathic cyanosis of the new born suprarenal gland seems to be quite helpful in bringing about relief. Ten cases have been so treated. It also has seemed beneficial in a few cases with congenital heart lesions. In such conditions the heart should be watched and digitalis given at the first signs of over-stimulation.

NERVOUS SYSTEM

Antispasmodic. Many of the cases with the conditions under discussion may be associated with a hyperactivity of the vagus system. This may be manifested by the patient in one or more ways. So it is not surprising that one individual may demonstrate one or more than one of these disorders from time to time. Hence, the observations reported in this paper would seem to indicate an antagonistic effect of the suprarenal material upon the parasympathetic system, probably through its stimulating action upon the sympathetic system.

Sedative. The patients with the so-called vagotonic symptoms are frequently nervous, jumpy and irritable. Relief of the disturbances is usually followed by a noticeable quieting down of the nervous condition. I had attributed this simply to a relief from the irritating disorder. It did not seem possible that there would be any actual sedative effect from the glandular substance. However, having been asked by several mothers whether there was anything in the medicine to make their children sleepy, I began to pay closer attention to this question. I have observed that in some cases there does seem to be a sedative effect, and in some instances an actual drowsiness, never a stupor, especially following repeated large doses.

Comparing this impression with the relaxation which may follow thyroid administration in some cases of hypothyroidism, it does not seem so impossible that the adrenal gland may have a similar action in certain individuals.

SKIN DISORDERS

Eczemas. Suprarenal gland alone or with iodides or thyroid has been used in 60 cases of eczematous lesions. This form of treatment in my experience has been much more successful in relieving eczemas than has any other therapeutic measure. To my mind the response has been more prompt and more certain than are those which have been reported with corn oil. And there is no comparison in the palatability of the two preparations. One doesn't have to wait, as has been reported of the oil method, for some time to elapse for signs of improvement to appear. A definite improvement usually follows the adrenal gland administration within one or two days. When the proper dosages for individual cases have been attained and if they are maintained, rarely does the skin condition fail to remain under desirable control. If the attendants should discontinue the treatment too soon, the leisions will soon reappear. They disappear again, however, following resumption of the medication. Such experiences in my opinion and also in those of observing attendants are excellent testimonies of the effectiveness of the glandular method of therapy. Because of the tendency to self-limitedness of the eczemas of infancy, one may be inclined to discount any apparent response to whatever medication may be administered. In children, however, the equally good responses which occur with the suprarenal gland treatment are more impressive.

A striking feature of the use of the endocrine substances in treating eczemas is that feeding the patients is not nearly so much a problem as it is with other therapeutic measures. Within a short time the patients are enabled to tolerate with little or no reactions foods to which they had been definitely hypersensitive. Therefore, it is relatively easy to supply the children with a balanced and adequate diet and at the same time have the skin condition remain under satisfactory control. Eggs and perhaps butter fats are the only foods with which one may have some difficulty. At least, that has been my experience. Local palliative applications may be helpful in the beginning but they are seldom needed for any length of time.

Urticaria. Although I have prescribed suprarenal gland to 15 cases of urticaria, the endocrine material does not seem to be nearly so dependable in relieving these conditions as it does with the eczemas. A few of the cases appeared to obtain some relief, but in most of them there was little if any noticeable effect.

Diaphoresis. Although I have no data for a definite opinion on any direct effect that the adrenal preparation may have on the sweat glands. I have noticed that in several cases of thyroid dysfunction an accompanying excess perspiring disappeared along with

the other signs and symptoms. This phenomenon may be merely of passing interest and may have no practical application.

UROGENITAL TRACT

Antidiuretic. The only observation I have on an action of the adrenal gland preparation upon kidney function is that it noticeably inhibits the diuretic action of the thyroid therapy.

ENDOCRINES

Thyroid. If suprarenal gland had no other therapeutic value its use would be extremely worth while with thyroid therapy. In treating hypothyroid patients who are intolerant to thyroid gland in minute doses, or those who later develop toxic reactions the adrenal substance is simply invaluable as an adjunctive measure. One may supply sufficient amounts of thyroid to intolerant individuals, one may give larger dosages to most of his cases without toxic reactions developing and thus be enabled to obtain desirable results with a minimum of untoward effects. Since gaining that information, I have found the treatment of cretins and hypothyroid children to be easier and my therapeutic results in such cases are uniformly much better.

In some respects the adrenal material seems to have an antagonistic effect upon the thyroid, in others, a synergistic one. And yet I am not sure that it has either directly. Might not an actual substitution or replacement effect be involved in either case? For example, thyroid gland by mouth may stimulate gastrointestinal peristalsis, cause diuresis, hyperpyrexia, erythema, iodine rhinitis or dermatitis, a cough or laryngeal stridor. Suprarenal gland by mouth in turn may inhibit any or all of these untoward effects of thyroid action. It inhibits the untoward reactions to thyroid with little if any apparent detraction from the desired beneficial effects. On the other land, in certain cases when the adrenal substance fails to relieve certain symptoms which it may be expected to relieve, or after a period of time it appears to have lost its effectiveness, the addition of a certain amount of thyroid or iodine to the suprarenal medication will frequently bring about the desired relief. In certain conditions such as vasomotor rhinitis, neither adrenal or thyroid gland alone will produce clinical results that will compare with what the two preparations together will do. Whether or not such seemingly antogonistic and interdependent action has anything to do with antihormones, I do not know. It would seem to me that the not unlogical place to find regulators of individual hormones, be they synergistic or antagonistic, would be in the endocrine glands themselves. The apparent establishment of tolerance to thyroid in thyroid intolerant individuals by the oral administration of suprarenal gland, and the apparent restoring of adrenal gland therapy effectiveness after it has apparently been lost by the addition of thyroid gland, would seem to be suggestive clues to say the least. Perhaps we are dealing with

a matter of imbalance consisting of relative insufficiencies. In other words, by changing a lesser or greater activity of one part of the neuroendocrine chain to a greater or lesser activity, one may in turn require a compensatory stepping-up or a stepping-down of another part or parts before metabolic balance can be established or restored. Meanwhile, however the therapeutic results may be produced physiologically, of this I am sure clinically they do occur.

Epinephrin. One firm from whom I obtain supplies of adrenal gland tablets assays the epinephrine content to be 4.3 per cent. In asthmatic dyspnea this preparation acts when administered orally very much like epinephrin does hypodermically. The advantages of the oral method especially in children are obvious, Rarely after using the suprarenal gland in asthmatic attacks have I found it necessary to resort to epinephrin.

Suprarenal Concentrate (Armour). With the comparatively little experience I have had with the suprarenal concentrate I have found its use disappointing. Occasionally it has given temporary relief in vasomotor rhinitis, but even then it tends to lose its effectiveness. Also it appears to have a tendency to dehydrate and cause loss in weight which certainly is not desirable with undernourished children. The whole adrenal gland combined with iodine or thyroid has been much more dependable in my hands in relieving similar conditions than has the suprarenal concentrate. Furthermore, with the whole gland therapy the patient's nutrition tends to improve rather than the reverse.

Cortin. I have no experience with cortin. It is of interest, however, to note that some of the effects of whole suprarenal gland therapy are very similar to those which are reported to follow cortin administration. On the other hand certain other effects are like those of epinephrin.

Untoward Reactions

Abdominal Pain. In certain individuals, particularly constipated ones, the adrenal gland material may produce an attack of abdominal pain very like that which may follow the oral application of the stronger solutions of epinephrin. As I have said before this reaction may be relieved or avoided by using smaller dosages in individual cases, or by combining atropine, iodine or thyroid with the suprarenal gland therapy.

Vomiting. Certain infants and children, especially those with constipation or gastroenterospasm, may react to the adrenal gland preparation with more or less vomiting. This untoward effect may be avoided by taking the same precautions as one would to prevent abdominal pain.

Constipation. Enough has been said concerning the effect of the suprarenal gland upon gastrointestinal activity. For the sake of emphasis. I repeat here that this endocrine material may cause constipation or aggravate a pre-existing one in certain individuals.

Atropine, iodine, or thyroid usually inhibit this effect upon the bowel function.

CONTRAINDICATIONS

Decompensated Heart. Because of the apparent and probable antagonism of the adrenal gland substance to vagus action, one should use this glandular preparation cautiously, if at all, in cases with decompensated hearts, and at all times keep in mind a possible sympathetic overstimulation. The pulse rate should be kept under observation.

Nephritis. I have not as yet knowingly given suprarenal gland to a patient with signs or symptoms of nephritis. Because of its apparent antidiuretic action and a possible hypertonic effect on the blood pressure, I feel that its use would be unwise in nephritic unless future information should justify it.

Constipation. Because it may aggravate the condition and may produce abdominal pain and vomiting one should avoid using the adrenal gland preparation in obstinately constipated cases unless one or the other counter-active remedies such as atropine, iodine or thyroid are also given.

COMPARISON WITH SIMILARLY ACTING DRUGS

Atropine. Atropine acts similarly to whole suprarenal gland in that it may in certain cases allay coughs, pylorospasm, enterospasm; may be helpful at times in asthma ; and may allay hypertonicity in some infants On the other hand it differs in that it may increase or produce nervousness in some individuals, or may increase gastro-intestinal peristalsis, whereas the adrenal gland has just the opposite effect. Furthermore, one does not obtain a reaction from the suprarenal preparation such as the hyperpyrexia which may occur with atropine.

Iodine. The chief way that iodine may be compared with suprarenal gland as a therapeutic agent is that both may be effective in relieving coughs or asthma in certain cases. Frequently by combining the two one may enhance the effectiveness of either one. Also, certain cases of congenital pylorospasm may react to iodine much like they will to atropine.

Phenobarbital. Phenobarbital is particularly beneficial in relieving the vomiting and abdominal pain of the pylorospasm and the gastrointestinal colic of infancy. And in many cases so is the adrenal gland. In fact frequently the endocrine substance may relieve cases which fail to respond to the barbiturate. Although the suprarenal preparation does seem to have some sedative action it does not compare in that respect with phenobarbital. Both preparations may be effective in relieving stubborn coughs in certain cases.

Calcium. Calcium, especially if it is given as a calcium iodide, acts very similarly but not so effectively as does suprarenal gland with or without iodine or thyroid in "colds," coughs, asthma, or

eczema. Calcium also has a moderate sedative action ; calcium also liket he adrenal material tends to counteract toxic reactions to iodine, without unduly inhibiting its desired results.

Ephedrine. Ephedrine acts much like suprarenal gland in asthma, but it does not have the same element of safety. The use of ephedrine is not without danger of alarming reactions. I have seen no such effects from enormous single doses (accidental) of the adrenal gland, nor have I observed any injurious effects from repeated therapeutic doses of the endocrine material no matter how long they were continued. With the disorders other than asthma in which the endocrine treatment may be quite useful, ephedrine does not seem to be so helpful.

Benzedrine. Although favourable reports have been presented as to the effectiveness of benzedrine in spasmodic disorders of the gastrointestinal tract, I have had no experience with it in such conditions. It does seem helpful in upper respiratory disorders in certain cases. However, if one should choose to prescribe benzedrine he should keep in mind that the over-stimulation and increased nervousness of its untoward reactions is just the opposite of the quieting down action of the suprarenal gland.

Codein. Needless to say, codein may be quite effective in relieving certain coughs and attacks of asthma. It is not any more infallible, however, than is any other remedial measure. Frequently the suprarenal gland may relieve certain coughs on which codein seems to have no effect. Codein also seems helpful in certain "colds," in asthmatic dyspnea, in certain gastrointestinal disturbances, and as a sedative. It, too, has the advantage of being effective by mouth. At the same time, in larger doses it may produce the same kind of abdominal pain, vomiting and constipation as may the adrenal gland. At times the concomitant administration of iodides appears to enhance the effectiveness of codein.

Neosynephrin. Neosynephrin in my experience more nearly approximates the action of the suprarenal gland than does any other therapeutic agent. Its elixir may usually be depended upon to produce similar favourable results in similar conditions nearly as well, at times seemingly better, as one may obtain with the adrenal material. Furthermore, little if any untoward reaction follows the use of neosynephrin. At times I find it helpful to use it interchangeably with or as an adjunct to the endocrine therapy.

Aspirin. Aspirin is reported to be beneficial in certain "colds" and coughs and in certain cases of asthma. Its chief value with endocrine therapy is in assisting in counteracting untoward reactions to thyroid, particularly the hyperpyrexia.

Iron. I would not presume to suggest that suprarenal gland should have a direct stimulating effect on the hematopoietic system, but its action is like iron in that either preparation tends to inhibit iodism. Syrup of ferrous iodide is still a useful therapeutic agent.

Sulphur. Assays show that the adrenal preparations contain 3.77 per cent of sulphur. I have heard so often about the old-fashioned household remedy of sulphur and molasses for "colds" and coughs. Perhaps the sulphur content of the suprarenal gland is not an important factor in the therapeutic results. Probably it is too unscientific to mention, but I cannot help wondering about it.

Gold Tribromide. Considering the enthusiastic claims which have been made for it, gold tribromide has been disappointing in my hands. According to my observations it has given little relief in whooping cough cases. At least, in my experience, it cannot be depended upon nearly so much as can phenobarbital, neosynephrin, or the endocrine form of therapy.

DOSAGES

Infants. In acute conditions better results seem to follow suprarenal gland administration at 2 or 3 hour intervals. Like those of epinephrin its immediate effects appear to be of relatively short duration. In less acute conditions better results seem to occur if the treatment is given with meals. The better minimal dose for infants seems to be 0.03 (½ gr.) or occasionally 0.016 (¼ gr) of desiccated whole suprarenal gland. The optimal or maximum dose appears to be 0.06 (1 gr.).

Children. The better dosages for children seem to be 0.06 (1 gr.) to 0.12 (2 gr.) of the desiccated whole gland at the same intervals as used for infants In my hands, when thyroid is also used, it appears better to give half as much of thyroid as of suprarenal gland. According to information received from various colleagues, the proportion of thyroid indicated in the endocrine form of treatment seems to vary according to local climatic and environmental conditions. Very probably this may depend to a certain extent upon the iodine or other mineral content of the local water and food supplies.

(*Illinois Medical Journal, Octobers 1937.*)

TREATMENT OF ACUTE NON-TUBERCULOSIS EMPYEMA OF THE PLEURA

PROF: RUDOLF DEMEL,
Vienna.

How old the surgical treatment of acute suppuration of the pleura is we can judge from the fact that, in the writings ascribed to Hippocrates and Euryphon von Knidas, very different methods for the treatment of empyema of the pleura are mentioned. Already at that time exactly as to-day the empyema cavity was opened

widely, either with knife or with a red-hot iron; or, what was a very complicated thing at that time, a method was used by which the cavity of the chest was emptied of the pus by boring into the rib. Then curiously, many, many centuries passed before the technical, essentially simple thoracocenteses and paracentesis-thoracis appeared, of which, above all, Laurentius Heister and, later, Schuh made extensive use and for which they used the trocar. This gave the impulse to the introduction of aspirators, from the different models of the celebrated apparatus of Dieulafoy and Potain to those of to-day, all of which are well-known to you.

The results of the operation for empyema, even in ancient times as well as in the Middle Ages, were generally so unfavourable that, according to old reports, it was considered a great exception when the patient's life was saved. It was reserved for Dieffenbach to heal two-thirds of his patients. The confidence that was felt in this operation at that time can best be judged from the well-known saying of Dupuytren. Though he was known as an advocate of operative treatment, when he himself was ill of pleura-empyema he refused the operation, saying: "I would rather die by the hand of God than by the hand of a surgeon."

When we compare the modest results of the oldest treatment of empyema with the successes of the last several decades, we must recognize distinct improvement. However, to-day we have not yet advanced so far as to be able to give a favourable report of operative successes. The 30 to 40 per cent. and still higher of mortality among the operated cases of the pleura-empyema to-day—and also the 30.4 per cent. in clinic Eiselsberg (1931) must also be regarded as too high The circumstance that from other sources we hear much more favourable reports about the mortality (20 per cent. to 40 per cent.) and, especially the increasingly great number of proposals to treat empyema, leads us to think that the points of view on the treatment of acute and not specific pleura empyema (and it is only of this form that we wish to speak at present) are not yet unanimous and also that the effective accomplishment of the different operative methods which we can use to-day are not properly valued.

In order to look into this operation more nearly, I should like to mention briefly the different methods in use to day. Of such the following come into consideration.

(1) The simple puncture of the effusion of the pleura, which can be repeated as often as is wished—either with a simple needle and syringe or with the apparatus of Dieulafoy and Potain.

(2) Of the method with open drainage of the empyema cavity we may mention the simple incision of the rib (pleurotomy), the primary resection of the rib, trepanning of the rib (which is nowadays almost entirely given up) and the undertaking of operation in a pneumatic chamber which, at the suggestion of Mikulicz, was worked

out by Sauerbruch and brought into practice by Brauer. It consists of a resection of two or three ribs, a division of the pleura under over-pressure, the emptying of the effusion, and at the end the filling of the pleural cavity with a tampon.

(3) The procedure with air tight drainage is represented by the widely spread method of syphon drainage according to Bulau. It is so well known that I do not need to speak of similar apparatuses, such as those by Mozingo, Singer, Soresi, Tiegel and others.

(4) Further, there are methods of air-tight drainage in connection with rib resection that go back to the arrangement o Revilliod and Storch and also other similar working instruments, such as the apparatus of Flesch, Iselin, Mikulicz, Nordamnn, Seidel and others, which through the method of Perthes-Hartert, have been put into practice. The substance of the Perthes-Hartert method is that, after thoracotomy with rib resection, the wide operation wound is closed with an air-tight rubber in which an air-tight tube is inserted. To this tube an aspirator is attached, by the help of which pleura exudation is withdrawn.

If we now ask ourselves, what the different methods can accomplish, in other words, for what forms of acute empyema they are most likely to come into question, the following is to be said:

By puncture the empyema cavity is seldom completely emptied; at most it is only partially evacuated. However, after partial emptying of the effusion, the lung which was compressed before can expand, especially because as we know, very frequently the resorption of the remaining effusion will be encouraged by the puncture. Puncture has a further advantage; namely, it can be repeated as often as wished. However, in order to be successful, it must not be undertaken with a very fine needle, especially if there is a thick exudation. Besides, care must be taken when there is no pneumothorax, that, with the puncture, no air penetrates into the empyema cavity.

A further advantage of treatment with puncture is that it has a very small mortality, and that even in difficult cases the condition of the patient is so far improved that the proposed operation can be undertaken later, with the greatest probability of better success.

Treatment by puncture can be tried in all forms of empyema, with the exception of the septic or putrid form. In no case is the relieving (also repeated puncture) so well justified as in the case of patients with displacement of the mediastinum or of the heart, who mostly come for operation in urgent cases. In such cases every other action which would result in a too quick removal of the heart displacement, would lead to a disastrous disturbance of the circulation.

The simple puncture comes into consideration for early empyema, also as long as the discharge is not really purulent, for bilateral

exudation, and for patients who are in a bad state of general health, as well as for empyema in children and for meta-pneumonic influenza and streptococcal empyema in adults. Even if a large number of cases can be healed by simple puncture, still puncturing should not be continued too long, especially when it is noticed, that the remaining discharge shows no inclination to dry up and that the complaint of the patient will not relax. In such a case it would be better to try some other method earlier. The process of air-tight drainage, especially the syphon drainage of Bulau, comes into consideration. With this a somewhat thicker discharge will doubtless be drawn off better than is possible by puncture. A discharge that is thick and rich in fibrin and is therefore difficult to empty, can be treated by thinning the exudation either with a physiological salt solution or some other means of liquefying. For this we have found a solution from Sauerbruch-Hermannsdorfer particularly suitable:

Pepsin 20.0
Acid. mur. acid. carbol. aa 2.0
Aq. dist. 400.0

A disadvantage to air-tight drainage is that, wherever the drainage lies for some time, the rubber tube is not held fast enough by the soft parts of the thorax wall and, in consequence, it can very easily fall out of the empyema cavity. This will be found to be very unpleasant, because on the one hand, air penetrates into the cavity and the lung is prevented from expanding again and, on the other, retention of pus can very easily be caused. In consequence of the syphon effect in this method the discharge is drawn out of the empyema cavity, even if the syphon effect is not certain and not constantly in action.

Air-tight drainage is, above all, suitable for empyema in children during the first two years of life most of whom can be cured by the help of this method. It comes further in question for the pneumonic influenza and streptococcal empyema of adults, the prognoses of which (especially streptococcal and influenzal empyema) are very bad, therefore at least in the beginning of the illness radical operation cannot be considered.

Under radical treatment comes the method with open drainage Even in their simplest form, that of pleurotomy, and still more in thoracotomy with rib resection, such operations are serious, because they are inseparably connected with the beginning of acute pneumothorax, which very specially favours infection of the pleura and exercises an unfavourable effect on the course of the disease of the lung. Besides, acute pneumothorax in cases with relaxation of the mediastinum leads to disturbance in breathing and heart-action, which is dangerous to life. Even the wide opening of the pleural cavity in a pneumatic chamber is not without danger in such cases, although it must be admitted that, only with the help of this method,

has it become possible to open the pleural cavity without special danger for the patient.

The wide opening of the empyema cavity after rib resection is dangerous, also, when operation is undertaken before the lung illness has ceased and the exudate has not yet become suppurative, but has still a serous or serofibrinous appearance, because at this time the pleura mediastinalis is generally yielding. That was also the reason why Perthes reckoned that the fourth week of illness was the most favourable time for rib resection. He did not want to attain anything else; he simply wished to await the first phase of the infection before opening the pleura.

The further disadvantage of open drainage is the circumstance that healing, even in the most favourable cases, takes a very long time. In general, the healing goes on, because on the one hand the pleura pulmonaris grows together with the pleura costalis from the farther points of the empyema toward the wound' and, on the other, that the thorax-wall retracts, which can be expected of a youthful thorax rather than of one of an adult patient; notwithstanding open drainage, even in the best hands, in 15 to 20 per cent. of the cases this leads to residuary empyema cavities.

In consequence of the pneumothorax these operations lead to collapse of the lungs, whereby the lung discontinues active breathing for a long time and, by persisting in a state of repose, the formation of a residuary empyema cavity is favoured. Besides, the obliteration or reduction of these cavities miscarries on the callosities of the pleura pulmonalis and costalis, which owe their origin to the constant irritating effect of the discharge.

On account of the danger and disadvantages connected with primary rib resection it has lately lost more and more value and is being substituted by secondary resection.

The wide thoracotomy with rib resection is the first to come into consideration in metapneumonic empyema of adults and in empyemas that arise from penetration by gangrene and abscesses as well as by pleura sepsis.

We can more easily decide on rib resection where there are already adhesions, in which there is no more danger that total pneumothorax will occur. In this sense rib resection is the best method to recommend for interlobar empyema. Incision in the fifth intercostal space, right as well as left is the easiest method of attaining the slanting slit and after the resection of one or more ribs (IV—VI) the interlobar empyema is laid wide open.

For children of one or two years of age, primary thoracotomy with resection is very dangerous.

In comparing results of the method of air-tight and open drainage the most striking thing is the difference in mortality. According to the literature the mortality in air-tight drainage is half as much as that in open drainage. Besides, when we think that the air-tight

drainage method is used mostly in the first place in severe cases, for weak patients, and for children in the earliest years of life then the lower mortality is all the more important.

Starting with the thought that empyema is only to be healed when the collapsed lung is again expanded and, further, that aspiration has an important adverse effect on the resorption of the exudation, one is proposed to use the syphon method in conjunction with rib resection. However, one great disadvantage of this method is that the principal requirement of Perthes, to keep the empyema cavity air-tight from the outside, has not yet been fulfilled, in spite of the different proposed constructions. Besides, the apparatus of Parthes is attached to the water pipe, so that the patient's bed must be placed near this.

As to what pressure should be used by the syphon method, we can say, that, without doubt, the pressure must not be too high at the beginning of the treatment to avoid possible premature adhesion of the lung surface to the pleura-parietalis, which would result in retention of the suppuration. In the first few days as much discharge should be drawn off as corresponds to the natural expansion of the lung ; also the patient ought not to feel any pain.

The aspiration methods find their use especially in acute and uncomplicated empyema in meta-and para-pneumonic forms, and, indeed, only in cases in which the lung on the side of the empyema is healthy. They must fail wherever the pleura cavity is in connection with the bronchial tree or when, in consequence of the long continuance of the illness, it has become rigid. If, therefore, the use of the syphon-drainage method seems to be somewhat restricted, they still do not lose in importance, because by their use, as we can see from the literature, mortality has been greatly reduced.

In our discussion we have referred to the principal methods of the operative treatment of pleura empyema. We shall now give some directions for the treatment of acute, not specific, empyema, according to experience.

In the course of time, we must first come to the conviction that the collection of pus in empyema is not to be treated as in an abscess, and that the emptying of the suppuration must follow other laws than in the case of an ordinary abscess in the soft parts.

With consideration for the above-mentioned injurious effort of acute pneumothorox on the activity of heart and lungs with a still movable mediastinum and on the deterioration of the pleura infection in existing pneumothorax, preference must be given to the air-tight drainage over the open one. Also, the shorter time of healing in air-tight drainage speaks for the closed method. A further advantage of the air-tight drainage is that it prevents too quick emptying of the pus, which we know, that in consequence of a sudden displacement of the heart, can often be dangerous to the patient. Air-tight

drainage makes it much more possible to suspend the emptying at will and, above all, to empty the pus slowly.

From the standpoint of pathological physiology and pathological anatomy the pleural discharge cannot be regarded as only a troublesome foreign body, on the soonest possible removal of which the organism works with all its might. The exudation is much more to be considered as a local reaction of the pleura. As the pleural discharge harbours the microbes and its toxins, it plays a part in the formation of antitoxin that must not be neglected ; for, the antitoxin being absorbed, the body is supported in its fight against infection. If the discharge for the whole period of illness were simply superfluous it could not be explained how, after complete emptying by puncture, discharge always appears again soon. This is especially to be observed in cases in which the process in the pleura or in the lungs has not been quite successful and is not overcome by the body. For this reason, owing to the certain, if also temporarily limited, usefulness of the discharge, we should not insist upon earliest possible evacuation. Only in cases in which, because of its amount, the discharge displaces the neighbouring organs (heart, lungs and vessels) and hinders their function, we are obliged, to act differently towards the exudation.

This opinion is corresponding to a method, without danger, to begin the treatment of empyema by puncture. The first punctures afford us the possibility of examining the discharge bacteriologically, and thus of learning the nature of the illness. We know that the prognosis of the illness is dependent upon the sort of microbes found. For instance, it is known that the pneumococcal pus is relatively benign whereas, streptococcal and influenza infections are distinguished by many complications and great mortality.

Therefore, the treatment of empyema to-day should not be decided upon before bacteriological examination has been made, because the further plan of treatment depends upon the result of such examination. If to-day we believe that careful, slow emptying of the pleural discharge by means of air-tight drainage is the suitable method, we also know that healing of the pleural suppurations without fistula, without leaving behind a remnant of the empyema cavity, without re-expanding of the lung, is not to be thought of ; for the other factors, that help in the reduction and disappearance of the cavity by the emptying of the exudation (as, for instance, the sinking of the thorax wall, the dislodgment of the diaphragm upward, the expansion of the lung of the healthy side, and the wandering of the mediastinum to the diseased side) are completed so slowly, that they are only affected when we have, not an acute, but a chronic empyema before us.

Naturally, the automatic expansion of the lung is possible only in early cases as long as the elasticity of the lung has not suffered

much in consequence of formation of callosity on the pleura pulmonalis. The circumstance that we often have patients upon whom we have used only the precautionary puncture method, because process of disease of the lung and the pleura has not been concluded, compels us all the more, to care for the lung expansion. For this purpose the syphon method has been created, so that the remaining of cavities may be avoided at least in comparatively fresh cases.

Until now the aspiration methods were joined with resection of one or several ribs. The literature of the last few years distinctly reveals the attempt to refrain as much as possible from using the broad opening of the pleural cavity. It cannot be immaterial if in so practically arranged a structure as the thorax is, whose perfect functioning and direct influence on the activity of the heart and lungs depend upon the pressure of the outer air and the pressure conditions in the chest cavity, a wide window is made without compelling reasons. To do so one of the main conditions would be destroyed which the thorax, in fulfilling its duty, needs so much. For this reason primary rib resection cannot to-day play the part it played at the time of Franz Konig, when it was considered the method of choice.

Especially in fresh cases, in which acute disturbance of the intrapleural pressure relations is to be reckoned with, not only must a strict emptying of the discharge be cared for, but also closure of the chest cavity must be strictly maintained.

These requirements are fulfilled by an apparatus made by us, which already in a great number of cases has proved good and which has realized an air-tight suction method in distinction from the aspiration method which up to the present time has been preceded by open drainage.

The instrument is composed of three parts put together; namely, one part, which is built into the thorax wall and serves for the air-tight drainage of the empyema cavity; a tube as preparation for the drawing off of the suppuration; and a suction apparatus, consisting of an evacuation pump which is connected with the collecting vessel. The collecting vessel is joined to a manometer by which the pressure used during the suction is measured.

The part of the apparatus that is to be fastened on the thorax wall consists of two metal tubes of equal size, separated from each other and formed like a trocar, which are bent into a half circle and by means of a fastening are joined so as to make a complete circle. This part of the apparatus must be sterilized by boiling before the operation.

The whole operation consists of two puncture incisions, one of which is made on the upper edge of a rib, and the other on the upper edge of the next rib lying below the first. In these puncture incisions, which only go through the skin and the intercostal musculature

and which leave the pleura costalis uninjured for the moment, the two small tubes of the apparatus are introduced with a twisting movement, one after the other, into the empyema cavity by which the pleura costalis is simply pierced. The tubes that are introduced into the empyema cavity are joined together in the correct corresponding position by a plug. Besides, on the apparatus a splint is fastened which is made of supple brass material so that it can be placed on every part of the thorax wall. Finally, the splint, with the apparatus, is fixed to the thorax wall by a circular bandage.

The apparatus has the following advantages: It is possible to put the apparatus air-tight into the empyema cavity, and by watching the hand of the manometer to regulate the slow emptying of the discharge. The negative pressure which is created by the absorption should not, in the first few days after the operation, exceed one-sixteenth of the atmosphere (that is, 47 mm. Hg.). Change of bandage is seldom necessary and when it must be done later, the suction apparatus need not be interrupted, as in the other similar methods. It is easy to avoid injury to the arteria intercostalis. Because of the blunt nature of the apparatus injury to the lung is impossible. The part of the instrument lying intrapleurally is in the neighbourhood of the inner surface of the thorax wall, so that shortening or displacement of the drainage tube is excluded. The apparatus consisting of two parts, completely clasps a rib, thus preventing it from falling out. The apparatus can be rinsed out at any time without being taken out or changed. It is further, not dependent upon a water pipe and, after the first few days following operation, allows the patient comparative freedom of movement. In a favourable course of the illness the patient can go about in the room with the apparatus in place, whereas the other suction mechanism of the apparatus must first be removed.

Should this air-tight aspiration method for some reason not succeed in its aim, then secondary thracotomy with rib resection can be undertaken.

I should like to say a word or two about the rinsing of the empyema cavity. A large number of different antiseptics have been recommended for this purpose. In Austria and Germany experience with them up to the present has not led to any convincing result and, besides, the opinions of foreign clinics are in many ways contradictory. We have seldom made use of rinsing, and it has been only in cases of mixed infection that we used Dakin.Carrel's or Pregl's solution.

In concluding I should like to point out that in pleural empyema we can speak of no uniform treatment even to-day; the cautious and experienced surgeon will proceed individually. He must bear in mind that the treatment must be saving and that it must not make still further demands upon the strength of a weakened organism.

With the healing of suppuration of the pleura, the treatment is not finished. After every empyema there remain changes in the affected organs in the form of adhesions of the pleura layers, wheals on the lungs, enlargements of the bronchi on the affected side, distension of the lungs on the healthy side, displacement of the heart, etc.—changes which diminish the functional capacity of these organs. In order that these difficulties can disappear without any remains, the changes must be subjected to an appropriate, well-carried out after-treatment. We have found the lung gymnastics of L. Hofbauer to be the best, because they consider to a great degree the functional side of the affected organs.

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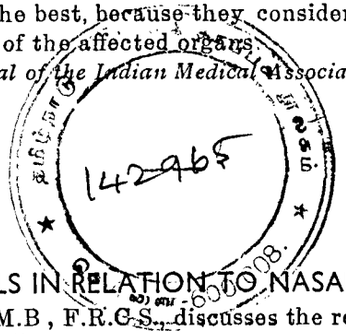


THE TONSILS IN RELATION TO NASAL CATARRH.

Ivor Griffiths, M.B , F.R.C.S., discusses the relation of the tonsils to nasal catarrh in "The Lancet" for Sept. 25, 1937. He says: the tonsils are often suspected of being sources of focal infection, and in consequence children's tonsils have been removed for such varied conditions as failure to gain weight, hydrocephalus, and mongolism. Undoubtedly the operation is justifiable and necessary when the tonsils are seriously diseased or when they are causing inflammation of the cervical glands, but I propose to analyze critically some of the conditions regarded by the Medical and lay public as indications for tonsillectomy.

I have made a study of 4500 children sent to the hospital for the removal of tonsils and adenoids. The clinical condition present was as follows: no symptoms (tonsils found to be slightly enlarged on routine examination), 31 per cent; sore throats, 19 per cent; cervical gland enlargement, 15 per cent; coughs and colds, 14 per cent; snoring and mouth-breathing, 9 per cent; general diseases, 6 per cent; deafness, 4 per cent; gross hypertrophy of tonsils, 2 per cent.

MIDDLE EAR INFECTION AND SNORING.

There is a widespread belief that the removal of tonsils and adenoids prevents infection passing to the middle ear, but in my experience discharging ears and mastoid disease or not uncommon in children whose tonsils and adenoids have been thoroughly removed. The removal of adenoids immediately cures snoring when this is due to a large mass of adenoidal tissue, but in other cases snoring and typical adenoid facies often persist after operation, and this throws doubt on the suitability of the treatment. I have found that swelling of the turbinate bones and inferior conchae is a common cause of snoring

and is also frequently due to infection of the antrum. Adequate treatment of infected antra will often stop snoring in a few days.

PHYSIOLOGICAL ENLARGEMENT.

There seems to be a physiological enlargement of the lymphatic tissue between the ages of four and six, and again between thirteen and fourteen. Moreover, tonsillar enlargement is a natural accompaniment of the common cold, but the tonsil returns to its normal condition when the nasal infection subsides.

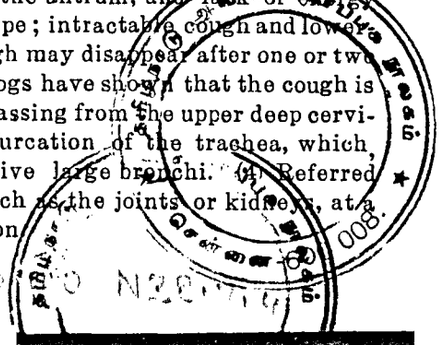
NASAL CATARRH.

The removal of tonsils and adenoids is widely recommended for the treatment of nasal catarrh. I have observed 385 severe cases, nearly all of which returned to the clinic after tonsillectomy with their nasal catarrh even worse than before. Most intractable cases of catarrh that I have seen have had their tonsils out before they came to the hospital. It seems reasonable, therefore to suggest that there may be another explanation for the catarrh which is believed to be due to unhealthy tonsils. I suggest that this explanation should be sought in the accessory nasal sinuses.

The openings of the frontal, sphenoidal, and ethmoidal sinuses are at the lowest part of the cavity, while that for the antrum is high up, in the worst possible position for drainage when the head is erect. Dust and the slight mucous secretion of these cavities are removed partly by the action of the cilia, partly by suction and partly by gravity. Negative pressure is produced in the sinuses during normal inspiration, and during hawking and sniffing. As a result of disease, any of these factors may be affected and the products of inflammation may accumulate.

In most of the children with sinusitis, the antrum alone was infected although in a few, ethmoiditis or frontal sinusitis was found. A red, boggy swelling of the inferior turbinates and the presence of pus or mucopus in the middle or inferior meatus were found to be strongly suggestive of infection of the antrum.

The patient suffering from nasal catarrh could be grouped into four clinical categories according to the dominant symptom: (1) Nasal type; nasal catarrh but in good health otherwise. (2) General type; acute manifestations such as generalized headaches and high fevers due to temporary occlusion of the antrum, and lack of energy between attacks. (3) Pulmonary type; intractable cough and lowering of the general health. The cough may disappear after one or two antrum lavages. Experiments on dogs have shown that the cough is probably due to a train of infection passing from the upper deep cervical glands to the glands at the bifurcation of the trachea, which, when enlarged, irritate the sensitive large bronchi. (4) Referred types; diseases present in organs such as the joints or kidneys, at a distance from the site of the infection.



A striking feature of my investigation has been that sinusitis is commoner in children who have had their tonsils removed than in normal children. This has suggested to me that the tonsil, far from being a danger, might actually have a protective function in the naso-pharynx. I therefore undertook an experimental study of the lymphatic connections of the air sinuses and tonsils.

LYMPHATICS.

I have tried the injection of coloured dyes into the nasal mucosa, the injection of mercury into the upper deep cervical glands, and the introduction of India ink into the nasal mucosa and sinuses of animals. The last method proved satisfactory, and I could trace the particles of ink from the nasal sinuses through the lymphatic glands to the tonsils. It may be that some of the particles found their way directly to the tonsil or that all of them first enter the upper deep cervical gland and then pass to the tonsil. The explanation of the fact that the particles travel in this way may be that the tonsil performs a special function in extruding organisms.

Clinical results confirm this explanation. Tonsils were found to diminish in size and to look less angry after sinus infection had been treated. Moreover, cervical adenitis subsided when nasal infection was removed.

If this be the true function of the tonsils, it is illogical to remove them for nasal catarrh. In mild cases of nasal catarrh, it is sufficient to instil 5 to 15 per cent. Argyrol or other antiseptic into the nasal fossae, provided that careful attention is also given to general hygienic measures enhancing resistance. Nutrition seems to be an important factor, especially an adequate supply of accessory food factors. Simple breathing exercises are useful, and there should be sufficient open-air and out-door exercise.

In more severe cases, the sinuses should be investigated, and, if infected, should be punctured and thoroughly washed out with saline or mild alkaline or boric lotions. It is a good plan to introduce Argyrol before withdrawing the cannula. Most children over the age of five can be treated with local anaesthesia, but a short general anaesthetic is required for young or intractable children.

SURGICAL REMOVAL.

If the tonsils and adenoids are hypertrophied, only the adenoids should be removed. Large masses of adenoidal tissue interfere with the normal breathing which is an essential factor in drainage of the sinuses. Small masses of adenoids should not be removed until the nasal sepsis has been eliminated, for by that time the lymphatic tissue is found very often to have returned to its normal size. The tonsils should never be removed, because their condition is usually secondary to disease in the nose. Incomplete removal is very often followed by enormous hypertrophy, which suggests that a compensating mechanism is at work trying to make up for the loss of the main masses of

lymphoid tissue. Removal of tonsils and adenoids in the presence of gross nasal infection is fraught with grave danger, particularly to the ears, and is likely to aggravate conditions in the nose.

SUMMARY.

(1) Accepted tonsillectomy indications may be criticized.

(2) Removal of the tonsils does not necessarily improve cases of middle-ear disease, snoring, or nasal catarrh.

(3) A study of 5000 children suffering from nose or throat complaints showed that 385 suffered from infection of the nasal accessory sinuses.

(4) Sinusitis was commoner in children who had tonsillectomy than in those whose tonsils were intact.

(5) An experimental study of the lymphatic drainage of the tonsils and sinuses suggests that the function of the tonsils is to receive lymphatic drainage from the sinuses and to excrete bacteria into the throat.

(6) Nasal catarrh can often be successfully treated by attention to the sinuses.

(7) In no circumstances should tonsils be removed for nasal catarrh.

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THE "REGIMENTED RATIONALE" IN THE TREATMENT OF RHEUMATIC DISEASE.

BY WILLIAM K. ISHMAEL, M.D. AND
EARL D. MCBRIDE, M.D., F.A.C.S.
Oklahoma City.

Chronic arthritis through the ages has been a persistent tormentor of human beings. Likewise, those seeking to control the disease through medical science have found the true cause and cure an enigma.

The initial evidence of its early intrusion of the mechanical structures of the body often exhibited through surprise attacks of "cricks," "catches" and "aches," may make the victim a subject of derision for his misfortune and even may be looked on with but passing concern by the person thus afflicted, when once he has obtained relief from his discomfort. He may little realize that the repetition of such signs indicates the subtle invasion of his body with a disease that will gradually cripple and permanently incapaciate him. When once the pain is persistent and the structures obviously

involved, however, the arthritic is quick to try any remedy that promises relief. He is difficult to satisfy, and is a true subject for the charlatan and patent medicine vendor. Thus it is that the painful restrictions of the characteristic symptoms of the chronic rheumatic have brought into existence more cure panaceas than any other disease. Wave after wave of promising cures have swept through the ages of time only to be discarded as perhaps helpful but not specific. Those searching for relief have been steamed, rubbed, adjusted and manipulated; dosed with foul smelling mineral waters, saturated with pain relief drugs, injected with intravenous medications and relieved of their teeth, tonsils and other accessories, only to find that as time rolled on the physical impairment progressed, oftentimes to complete miserable disability. Hopes were greatly raised fifty years ago when Billington established the importance of focal infection, but even though thorough removal of all possible foci is acknowledged as an essential phase of the treatment, the results in most instances are only a temporary halting of the progress of the invading disease. "Once a rheumatic, always a rheumatic," is not far from a true saying.

What is the answer? Certainly it would be Utopia if a specific remedy could be established, but none yet has been proved. Still the rheumatic patient must be treated. What we need to realize is that the nature of the disease is constitutionally insidious and its progress persistently disabling so that to accomplish permanent therapeutic results the clinical complexity as a systemic whole must be the criterion in contra-distinction to the delusive satisfaction of removing teeth and tonsils or prescribing symptom relieving drugs. To adopt the more thorough program it will be necessary to regiment all the diagnostic and therapeutic influences of medical research. The attack must be consolidated to the broadside with an armamentarium of therapeutic weapons fully outfitted with information and assistance from the laboratory, the bacteriologist, the radiologist, the physiologist, the chemist, the spealist clinician, the dietitician and the orthopedist. Information thus obtained, however, must be evaluated and co-ordinated for use of the family physician or the one who is to maintain continuous control over the patient.

When such a comprehensive regime of management has replaced the poorly planned, haphazard symptom relieving methods of temporary effectiveness and the rhematic patient as well as the general public is taught the reality of procrastination in seeking competent diagnosis and is awakened to the fickleness of trying out undirected cures then will there be a realization that the chronic arthritic can exert a normal span of life within his limits of disability just as the patient with tuberculosis or diabetes has found he can do. It seems appropriate to designate such a system of treatment the "Regimented Rationale."

Outline of Regimented Rationale.

In outline, the "regimented rationale" would be somewhat as follows:

1. Recognition on the part of the physician that the disease must be classified and treated according to etiological diagnosis.
2. A detailed systematic investigation of each particular case, using all facilities of clinical and laboratory procedures available.
3. Consultation with specialists, such as dentistry, otolaryngology, proctology and others.
4. Thorough correlation and management of the case through co-operation between the one who actively manages the case and those who have brought about the information as the result of clinical and laboratory research.
5. Details of treatment:
   - *a.* Medical relief of pain and immediate symptoms.
   - *b.* correction of constitutional disturbances:
     1. Metabolic disturbances.
     2. Endocrine influences.
     3. Vitamine deficiencies.
     4. Gall bladder, intestinal and other systemic factors.
     5. Allergy phenomena.
   - *c.* Removal of focal infections.
   - *d.* Spe cific therapy; vaccines.
   - *e.* Orthopedic measures.
   - *f.* Physical therapy.
   - *g.* Drugs.

Such a program is successful provided it is carried out thoroughly, but any partial application is bound to fail.

Medical Relief of Pain.

The morale of the rheumatic is often greatly broken and it is important to establish renewed confidence through early relief of painful symptoms. There are many useful drugs for this purpose; the most popular one being the salicylates in one form or another. A definite rest routine is outlined. Factors of cold, fatigue, too much exercise and deleterious habits are corrected. General supportive treatment is given especially to correct anemia, nervousness or any systemic debility that may be present.

Diagnosis and Etiological Classification.

The recognized classifications of chronic arthritis should, of course, be understood and used; but when preparing to undertake treatment of a given case, there are two general categories in which to place the case from the etiological standpoint. First, does it have an acute, subacute or chronic infectious aspect; or, second, is it more of a non-infectious nature in which such factors as vitamin, endocrine,

allergic, metabolic or traumatic disturbances render an important influence?

Laboratory Procedures.

Considerable laboratory information is essential for the etiological diagnosis and must be obtained in each case. A complete blood count to determine the amount of anemia and leukocytosis; a sedimentation time to indicate infection; a Schilling hemogram to determine activity of infection; a streptococcic agglutination test to determine streptococcic sensitivity; a Wassermann to rule out syphilis. A basal metabolism rate is essential; a sugar tolerance test for carbohydrate metabolism; blood chemistry in cases suspicious of gout; a leukopenic index for bacterial or other hypersensitivity; complement fixation tests; cultures from teeth, tonsils, sinuses, prostate and other infected areas; x rays of joints for diagnostic aid and other tests of diagnostic benefit indicated in particular symptoms syndrones.

Consultation with Specialists

In making a thorough study of the case, many diagnostic angles arise which involve the special fields of medicine. All diagnostic and therapeutic consultations should be directed and co ordinated by the physician in charge of the case. The dentist, for instance may make recommendations regarding extraction of teeth, or the throat specialist may condemn the tonsils, but it is not wise to place too great a dependance on such procedures or to be too hasty or too radical. No disease requires a closer study of all the related systemic factors in etiology than that of chronic arthritis.

Correlation and Management

After the laboratory results are compiled and all features developed in the diagnosis are drawn together, the correlation and management is begun. Recommendations are listed and plans laid to carry them out to the best advantage.

Correction of Constitutional Disturbances

It is of prime importance that arthritis be considered a systemic disease. Focal infection may be the precipitating causative agent but it is not necessarily the primary etiological factor. A thorough history of symptoms and personal habits dating from childhood is essential in evaluating the distinctive features of the case.

Faulty Metabolism:—An abnormal basal metabolic rate is often indicative of systemic depreciation relative to endocrine balance. There may be a delayed glucose removal from the blood stream which increases joint pain. There may be difficult menses with increased rheumatic pain several days before and during the menstrual period. Nervousness and loss of appetite may result from upset calciumphosphorus metabolism. Especial attention should be given the underweight and overweight.

Endocrine Influences:—Thyroid and other endocrine disturbances are frequently observed in the chronic arthritic. Many thyroid deficient cases do not present a picture of thyroid derangement *per se*, but give the picture of ovarian dysfunction. The results of estrin therapy in these cases emphasize the need for further investigation of estrin as an agent for relief of symptoms; first in women with a sharp increase in joint symptoms in the premenstrual periods, and second in women of the menopausal group in whom the onset of joint pains comes with the onset of menopause. This latter group of patients will be discussed later.

Estrin, given to this first group of patients, very frequently causes severe flareups of the rheumatic process, but it is of interest to note that none of these patients received benefit from progesterone in the amounts used, although larger doses might prove efficacious. Some of the patients in the first group received complete relief from symptoms with the administration of estrin. However, the treatment purely substitutional and the original symptoms return when the treatment is stopped. Other supportive treatment is necessary.

Vitamine Deficiencies:—There are no laboratory methods available for this determination but very often symptoms are encountered which indicate abnormal growth, abscess, zerophthalmia and night blindness, lowered resistance to infections, defective teeth, deranged lachrymal secretion, etc., associated with arthritis. Patients with these symptoms often show marked improvement under Vitamine A therapy.

Vitamine B1 and B2 are important in rheumatic disease. Symptoms of impaired growth, weakness and fatigue, loss of appetite, disturbances in the metabolism of carbohydrates, low glucose tolerance, hyperglycemia, vague nervous system involvements, polyneuritis, indigestion, constipation, colitis, edema, dermatitis and thickening of the skin, soreness and inflammation of the tongue and mouth, etc., should make one suspect vitamine B1 and B2 deficiency. Recently, I have had several cases respond spectacularly to this therapy. Treatment should be begun by subcutaneous injection of vitamine B1. Therapy B1 and B2 by mouth should follow. A diet high in vitamine B should also be utilized. All toxins such as alcohol and heavy meals should be deleted.

A patient with petechii, pale and sallow complexion, severe dental caries and loosening and shedding of teeth with spongy, bleeding gums, bone decalcification, etc., should receive heavy vitamine C therapy. These cases have bleeding into the joints and muscles, as well as in the skin and gums, and they showed marked pain and swelling in joints and limbs. Spontaneous fractures are seen in severe cases. The results in these cases are almost dramatic.

Vitamine D has been used extensively for arthritis therapy and possibly has been overdone. Unquestionably, small doses are of

benefit in all cases. Large doses in acute cases may prove disastrous. Our attempt to use large doses (100,000 units per day) almost invariably caused increased pain and heat even in chronic cases. However, vitamine D deficiencies must not be overlooked because many patients recover on this therapy. They usually show other evidence of osteomalacia along with a negative calcium and phosphorus retention balance. This type of case is frequently seen in postpartum woman who nurse their babies and do not take ample calcium and vitamine D.

Gastro-Intestinal Tract and Diet: Careful attention to the gastrointestinal tract will usually create an improvement of function in all organs. Much is to be said on this phase of the treatment of arthritis. Faulty digestion, gall bladder affections, constipation and many other factors have an important bearing in many cases. A strict dietary regime will lessen the load and a curtailment of carbohydrates is often indicated.

Allergy Phenomena: The question of allergy in arthritis is not new, but comparably little is known about this angle. Recently, food allergy as a causative agent has been recognized and more cases are reported each day where some specific food serves as the precipitating factor. Striking results are gained when the specific foods are removed and we have found such foods as grapefruit, prunes and coffee to be offending antigens. As a rule, the increased pain, swelling and redness comes on one and one-half to two hours following the ingestion of the food and lasts for about three days. The leukopenic index and intradermal skin tests are used as the laboratory test for sensitivity. More evidence is being produced to show that bacterial infection can produce the rheumatic syndrome by acting as an allergic antigen.

Specific Therapy—Vaccine: Specific therapy although not entirely satisfactory at the present time, is becoming more dependable due to the diligent efforts of those interested in laboratory research on arthritis. Vaccine methods vary greatly, yet, there has been developed a newer aspect especially in regard to the allergic or sensitivity conception of inducing increased resistance to toxic organisms in contradistinction to the Erlich's immunologic conception of combating infections. Infinitesimal doses of especially prepared vaccines are used to produce a characteristic reaction of a euphoric state of well-being rather than large doses which produce shock and febrile reactions.

The dilution of the vaccine is extremely important. It is usually safe to start with 0.5 cc. of a dilution of .000,0000,01 organisms per cc. and increase this dose until the desired reaction is reached. The injections should be given every three or four days and the dosage increased or decreased according to the patient's reaction. Very often the dosage is advanced greatly but it is safer to start with the

above amount. This type of therapy is more clearly indicated in patients showing increased sedimentation rates, Schilling shift to the left, positive streptococcus agglutination and a positive leukopenic index. It might be said that this group could be classified as chronic streptococcic disease, just as tuberculosis with all its side phenomena is a chronic tubercular disease.

Vaccine therapy, given purely with the idea of desensitization of the bacterial hypersensitivity in a series of one hundred patients with the above findings caused eighty-eight to become pain free and the sedimentation time returned to normal in two months' therapy General supportive treatment was also instituted. Two of the above group quit on the grounds that they thought they were receiving aspirin.

High titre antigen reactions are not well understood, but it is obvious that the antigen must be fairly specific. There is some overlapping in the streptococcic series and the vaccine must be prepared from several strains. The one most successful in our hands has been one from cultures of the arthrotropic series of Cecil, Nichols and Stainsby ; the Q-33 strain of Homer Swift ; the typical strain Walter Crowe ; and five strains isolated in our laboratories. These are mixed in equal proportion, killed with 0.3 per cent phenol solution and proper dilutions are then made. Frequent testing for sterility must be made with the stock kept fresh.

ORTHOPEDIC MEASURES

One of the important features of a regimented management of a rheumatic condition is the orthopedic consideration. As many of the joint changes will be permanent, and ankylosis is likely to occur, it is extremely important to guard correct anatomical position of joints. Correct splinting with casts, corsets and braces, timely manipulation, restoration of joint motion and the amount of weight bearing, require judgment and experience, and mistakes are likely to result in crippling deformities. Acutely inflamed joints require splinting and protection, but as soon as the acute inflammation subsides, motion should be established. Weight-bearing joints should be protected over a long period and full function should be resumed cautiously. Orthopedic consultation frequently is necessary.

Surgical restoration of ankylosed joints may be accomplished but only after all inflammation and rheumatic activity is quiescent. Surgery of any place in the body frequently causes a generalized flareup of the rheumatic process.

PHYSICAL THERAPY

Physical therapy affords, as a whole, the oldest means of attack on the rheumatic problem. The use of physical therapy is far from being appreciated and up until relatively recent times has been in the hands of masseurs, and various cults. The popularity of the various resorts and springs tells us that we are overlooking an important phase in medicine.

The influence and use of heat together with massage and medical gymnastics form the most valuable measure in the realm of physical therapy in relation to arthritis. Such treatment should be given by a competent physical therapy technician under the direct supervision of the physician who is managing the case.

Fever therapy is one special method of heat therapy that has proved to be a specific in gonorrheal arthritis. A temperature of from 104° F. to 106° F. is maintained for three hours or so, and from two to four treatments are necessary.

Massage, hydrotherapy, colonic irrigations, exercises and various high frequency currents may have very definite contra-indications. Too many patients with lowered blood pressure, impaired heart action and general debility are subjected to weakening, severe hot baths without medical supervision. Many acute joints are made worse by the indiscriminate use of infra red and various short wave treatments.

Special mention should be made of the administration of acetyl choline derivatives by iontophoresis or galvanism. Again medical supervision is essential to prevent accidents from lowered blood pressure. Very encouraging results can be had in chronic cases.

The therapeutic value of physical therapy can be summed up by listing the definite responses :

1. Prevention of atrophy, correction of deformity, and restoration of a better muscle tone.
2. Improvement of local and general circulation and metabolism.
3. Prevention of ankylosis and restoration of joint motion.

DRUGS

It is impossible to mention here all the measures used to combat rheumatic disease, but perhaps mention should be made of the use of colloidal sulphur, colloidal gold and other heavy salts, chalmoogra oil, bee sting toxin, non-specific proteins, and liver extract. Favourable reports have been made in all the above, but indications for them have been few.

SUMMARY.

The object of these summarized remarks on chronic arthritis is to point out the necessity of regimenting all the combating forces at one's command if one is to treat the disease at all and to warn that it is a disease with the course of a lifetime ; so that even though a case may become symptom free and all activity temporarily quieted, the disease should be considered in an arrested state and not as cured. The term " Regimented Rationale " has been coined to characterize the all inclusive attitude toward treatment which is preferred to the more or less experimental haphazard use of drugs and overestimated singular measures of relief.

In general, the most reliable form of therapy falls in three groups : rest, systemic correction, vitamins and high dilution desensitizing vaccines. It is to be remembered that something can be done for the rheumatic and these patients are always extremely grateful for any relief that is given them.

Medical News & Notes.

COCHIN MEDICAL ASSOCIATION. A meeting of the Cochin Medical Association was held in the Municipal Hall, Mattancheri, on 25th March 1938. Dr. A. N. Varghese, Civil Surgeon, Br. Cochin, presided. Dr. (Mrs.) C. V. Sankarambal read a paper on "Peptic Ulcer". There was a discussion on the subject among the members. The President gave out many hints which were the results of his practical experience.

Dr. J. Ramakrishna Aiyar proposed a vote of thanks.

The members were entertained to tea by Mr. J. V. Kamath.

TINNEVELLY DT. MEDICAL ASSOCIATION. The Tinnevelly District Medical Association held its monthly meeting at Palamcottah, on 26th March 1938, Lt. Col. T. S. Shastry presided.

A resolution congratulating Dr. (Mrs.) Poonen Lukose, on her appointment as Surgeon-General of the Travancore State was passed.

Dr. P. S. Srinivasan, of the Government Headquarters Hospital, Palamcottah, read out some interesting cases which were successfully treated at the hospital. All the cases were fully discussed by the members, after which the President, summed up the salient features of all the cases and their differential diagnosis in detail.

Lieut -Col. Shastry, also announced that the next meeting of the Association will be held at Cape Comerin on April 23rd, 1938 and that the July meeting to be held at Courtallam would be a joint meeting of the four Medical Associations of Tinnevelly, Ramnad, Madura, and Trivandrum.

A tea party and a dinner were also arranged in connection with the meeting on 26th March 1938.

NORTH ARCOT DT. MEDICAL ASSOCIATION. The North Arcot District Medical Association held its monthly meeting on 19th April 1938 at the Missionary Medical School Hospital. Thottapalayam, with Dr. (Miss) Ida S. Scudder, Principal, Missionary Medical School, Vellore, in the chair.

Major F. J. Shepherd, I M.S., District Medical Officer, North Arcot delivered a lecture on "Extra-Peritoneal Caesarian, ", in the course of which he gave his personal experiences in conducting such

operations, especially after the failure of the forceps. A discussion followed after which cases from the local Government Pentland Hospital were clinically demonstrated.

The Secretary, Dr. S. Kanthimathynathan, proposed a vote of thanks.

THE TINNEVELLY DISTRICT MEDICAL ASSOCIATION, PALAMCOTTAH.

(Tinnevelly Branch of the Indian Medical Association)

The Tinnevelly District Medical Association held its monthly meeting at the Public Library, Palamcottah, on Saturday the 26th March 1938 Members numbering 62 including two women doctors were present. Dr. M. E. Naidu, and Dr. M. Vaithianathan of Nagarcoil, members of the Travancore Medical Association were present on the occasion as guests.

After Tea and Music, the meeting began under the Presidentship of Lieut. Col. T.S. Shastry, I.M S. The Secretary read the minutes of the last monthly meeting held at Nanguneri.

A Resolution congratulating Dr. Mrs. Poonen Lukose, B A., M.B.B S., (London), L.M., (Rot), on her appointment as Surgeon-General of the Travancore State was passed nem-con., the resolution having been moved by the President.

Dr. P. S. Srinivasan, L.M.P., of the Government Head Quarters Hospital, Palamcottah, read out the following interesting cases which were successfully treated and operated at the Government Head Quarters Hospital, Palamcottah :—

1. A case of Paralysis of deltoid with a tumor on the upper part of the Arm. 2. A case of Lymphosarcoma—a boy of 10 years. 3. A case of Heart Disease. 4. Two cases of Breast Tumour.

The following cases in connection with the above were exhibited to the members :—

1. A case of nephrectomy done for Hydro-Pyonephrosis.
2. A case of Tumour on the arm—diagnosis made.
3. A case of lymph-adeno-Sarcoma in a boy.
4. A case of Aortic regurgitation.

All the cases were fully discussed by the members. Thereafter Col. Shastry, summed up the salient and important features of all the cases and their differential diagnosis in detail. He offered his thanks to Mr. C. V. Gopalan, the Secretary of the Public Library, Palamcottah, for granting permission to hold the meeting in the Library buildings. He also thanked Dr. M. E. Naidu, and Dr. Vaithianathan of Nagercoil for their readiness to accept our invitation and having given us the pleasure of their company at our meeting.

LT.-COL., T. S. Shastry, I. M. S., announced that the next meeting of our Association will be held at Cape Comerin as the Joint Meeting of the Tinnevelly District Medical Association and the Travancore Medical Association on Saturday the 23rd of April 1938.

He also announced that the July meeting at Courtallam will be a Joint Meeting of the four Medical Associations of Tinnevelly, Ramnad, Madura, and Trivandrum.

The formation of the Provincial Branch of the Indian Medical Association for the South was postponed to a later date. Thereafter a dinner brought the happy gathering to a close.

Correspondence.

ASSOCIATION OF SURGEONS IN INDIA.

Organizing Secretaries :

K. G. PANDALAI, M.B., C.M., F.R.C.S., Lt.-Col., I.M.S.
C. P. VISWANATHA MENON, M.S., F.R.C S.

"BINFIELD"
Kilpauk, Madras.
15—3—'38.

Dear Sir,

In continuation of our letter to you, dated 6-1-'38, we have to report that a very large number of Surgeons in India whom we had addressed on the above subject, have sent encouraging replies and have promised to support us whole-heartedly. It was hoped that the inaugural meeting could be held in Bombay in the middle of April 1938; but, it is now found that adequate arrangements for the holding of the meeting could not be completed before that date. The Surgeons of Bombay city have, therefore, proposed that a more convenient time would be in October 1938 and have suggested 22nd, 23rd and 24th October 1938, as suitable dates for the meeting. The suggestion may be approved, especially as one of the Organizing Secretaries (K. G. P.) is obliged to leave India immediately for reasons of health. He returns before September next and in his absence the work will be carried on by the other Secretary Dr. C. P. Viswanatha Menon.

The Secretary of the British Association of Surgeons (Mr. Mitchiner, F.R.C.S.), whom we addressed on the matter, has kindly sent us a copy of their rules and has promised to send us shortly a message of goodwill from his Association.

The Surgeons of Bombay have met and formed a Reception Committee for making local arrangements.

Dr. M. D. D. Gilder, M.D., (Lond.), F.R.C.S., (Eng.), Minister for Public Health, Bombay, will preside and deliver the Inaugural Address.

At the forthcoming meeting, discussion on the following subjects will be initiated by Bombay Surgeons :—

(1) Ileo-Caecal Tuberculosis.

(2) Carcinoma of the Tongue.

We hope sincerely that Surgeons from other parts of India would also contribute papers of interest and make the Session a success.

We hope that the change would not cause you inconvenience and that you will take advantage of the interval for preparing papers for discussion.

It is the general feeling that the Association should have its own Journal at an early date If this ambition of ours is to materialise, we should have at our disposal, most of the Surgical literary effort now scattered in sundry medical papers, published in different parts of India. We hope, therefore, that all those who now practise Surgery in the country, would join this Association and send to the Secretaries whatever material they may have, for publication in the archieves of the Association of Surgeons.

A further communication will be sent to you when the programme of the meeting and other details are ready.

Yours truly,
K. G. PANDALAI,
C. P. VISWANATHA MENON.

NOTICE.

ALL INDIA MEDICAL LICENTIATES' ASSOCIATION, BOMBAY.

Robert Kotch Memorial Prize.

The Scientific Research Committee of the All India Medical Licentiates' Association, has decided to award a Cash Prize of Rs. 100 for the best article on "Tuberculosis in India" which should be confined to Pulmonary Tuberculosis only with aetiology, pathology, signs, symptoms and treatment both medical as well as preventive. It must be based on original survey conducted by the candidate himself of the Province or of the Districts in which he or she lives—in such a manner that some useful inferences may be drawn from it. The article should not be more than 1000 lines of the Foolscap paper size and should reach **Dr. Jai Gopal, M. O. I/C Dipalpur Dispensary, Dt. Montgomery, Punjab** by 31st October, 1938. The best paper selected will be published in the Indian Medical Journal and the winner will

be awarded a certificate of Merit together with the Cash Prize. All the members of the All India Medical Licentiates' Association are eligible to compete.

Any further communications on this subject may be addressed to the undersigned.

"Prasadpura House."
Agra.

(Sd.) T. C. BASU CHAUDHURY,
Secretary, S. R. Committee, A.I.M.L A.

THERAPEUTIC NOTES.

Treatment by Urea Sulphazide (urea salt of Amino—Benzene—sulphonamide). This preparation is very effective in cases of septic infection by streptococcus, especially of the haemolytic variety. It is also useful in infection by staphylococcus origin and B. Coli. This new compound differs from the commonly used sodium salt in having the sodium replaced by urea and is less toxic. The dose is one ampoule of 5 c.c. two or three times a day, and even can be given more in 24 hours in very severe cases without any harm to the patient. Urea Sulphazide is supplied in ampoules of 5 c c. of 5 per cent solution and tabloids 2 or 3 tablets 3 times a day.

Lt. Col. K. G. Pandalai, I.M.S. has said thus :—"I have been using Urea Sulphazide (oral) manufactured by the Union Drug Co. of Calcutta in a number of cases of streptococcal infection with satisfactory results."

TREATMENT OF BRONCHIAL AND PULMONARY AFFECTIONS.

Pulmotran (Cipla) is an entirely new compound of quinine and camphor, soluble in volatile oils. For the treatment of bronchial and pulmonary affections such as acute bronchitis, broncho-pneumonia, chronic bronchitis, influenzal pneumonia and post operative pneumonia, Pulmotran is of exceptional therapeutic value. One or two c.c. of Pulmotran injected intragluteally produce great soothing action on the inflammed mucous membranes. There is an immediate

improvement in the condition of the patient evidenced by the diminishing quantity of sputum less frequent spasms of cough and easy expectorations. The sputum loses its foetid character and within six hours of the first injection, the patient feels much better. Pulmotran is decidedly a new advance in the therapy of all kinds of bronchial and pulmonary affections. For further particulars and samples, the medical profession is requested to write to CIPLA Laboratories, Bellasis Road, Byculla, Bombay.

(1)	(2)	(1)	(2)