

VOL. VII

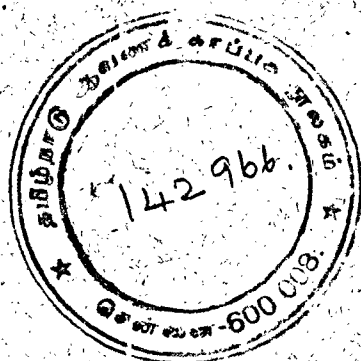
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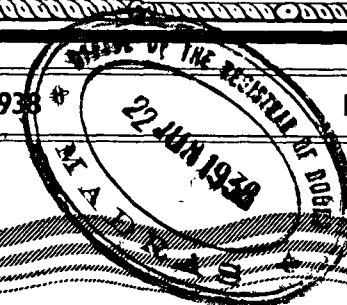


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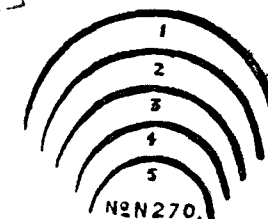
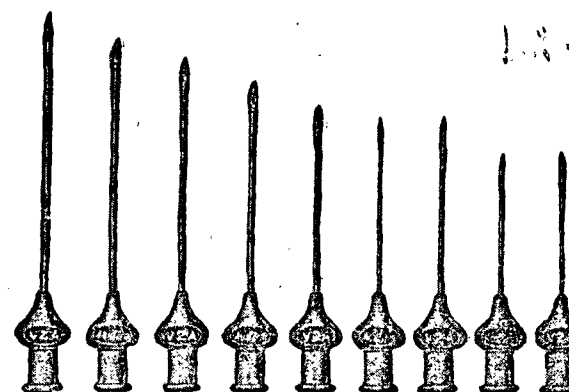
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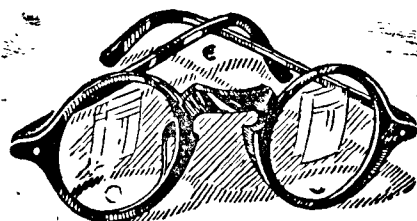
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A MONTHLY JOURNAL OF PRACTICAL MEDICINE & SURGERY

Editor : Dr. P. R. Venkappaya.

VOL. VII

MAY 1938

No. 5

## CONTENTS

| ARTICLES—                                                                                        | PAGE. |
|--------------------------------------------------------------------------------------------------|-------|
| The Treatment of Pneumonia in Children—By Joseph K. Calvin, M.D. ... ..                          | 171   |
| The Recognition and Management of the More Common Cardiac Conditions—By W. L. Shippey, M.D. ...  | 177   |
| Radiation Therapy in Non-Malignant Diseases—By Kenneth D. A. Allen, M.D., ... ..                 | 184   |
| Treatment of Bronchial and Pulmonary Affections with Pulmotran—By Dr. H. N. Dastur, M.B.B.S. ... | 195   |
| EXTRACTS ... ..                                                                                  | 196   |
| MEDICAL NEWS AND NOTES ... ..                                                                    | 203   |
| THERAPEUTIC NOTES ... ..                                                                         | 205   |

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## MEDICO-SURGICAL SUGGESTIONS



VOL. VII

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### THE TREATMENT OF PNEUMONIA IN CHILDREN.

JOSEPH K. CALVIN, M.D.

*Chicago.*

*Prophylaxis.* Pneumonia in children is usually preceded by an upper respiratory infection such as the common "cold," bronchitis, grippe, "flu" or whatever you might call it, frequently accompanied by several days of mild fever. The question arises: Is it possible to forestall the pneumonia. I believe that it often is possible. The sudden recrudescence of fever and severe symptoms ushering in the pneumonia usually occur after a day or two of normal temperature following the insidious febrile grippal infection. Consequently, especially during the pneumonia season, the acutely febrile child should be put fully and completely to bed, not always an easy task to carry out in younger children, who will not voluntarily remain in bed unless desperately ill. Bed should be insisted on until the temperature has been normal (rectally under 100°) for at least two or three days to avoid this so-called relapse. Generally speaking, bed rest is best continued also until the appetite returns, as until then convalescence is not well established.

Chilling should be carefully avoided by providing warm enough bed clothes, etc., and especially if a bed pan is not used, the child should have warm foot covering and be dressed with a robe or blanket before being carried to the toilet.

It is very important to prevent secondary or superinfections by isolating the patient from all children and most adult visitors.

*Active Treatment.* If pneumonia develops in spite of these precautions, or if already present when the child is first seen, I believe most of us realize that it is a self-limited disease, mostly running a favorable course in children, and should not be over-treated. There are, however, factors in therapy that undoubtedly tend to promote a favorable outcome, especially in the more seriously ill.

*Rest,* both physical and mental, cannot be overemphasized. Cough, pain and delirium should be controlled sufficiently by hydrotherapy and sedatives to assure rest. Mental rest can be obtained by not overtreating, especially with relatively nonessential procedures that may frighten and disturb the child. Even the nurse should disturb the patient as little as possible and not be overzealous about

keeping the bed in order, the patient clean, his teeth brushed and his hair combed, if these procedures annoy him, while he is seriously ill. However, his position should be changed from time to time and infants should be held part of the time. Incidentally, the infant's shirt should not be tightly pinned to the diaper, as respiration is definitely interfered with thereby. Visitors and even near relatives in the sickroom should be reduced to the minimum, especially if their presence induces excitement.

*Temperature of the Room.* Inasmuch as most young children with pneumonia have had a preceding or associated bronchitis, moderately warm, moist air provides the greatest comfort. Fresh air without draft is also essential. This ideal of fresh, moist, warm air can be obtained, even during the winter, by opening the window moderately behind as screen or ventilator, keeping the radiator turned on but covered with a wet towel, or hanging wet sheets about, or boiling water in the room off and on to provide moisture. Occasionally the child, if not too sick, can be carried into another room while the sickroom is being thoroughly aired, and the fresh air warmed before returning the child.

*Diet.* The child with pneumonia usually loses his appetite completely, vomiting is frequent at the onset and constipation is the rule. Serious ketosis and disturbances of mineral and water metabolism occur easily. Fluids and easily assimilated carbohydrates are essential during the acute stage of the illness to combat toxemia, dehydration and ketosis and to promote diuresis. The little patient will prefer drinking to eating, especially during the first few days. Inasmuch as the child has no appetite, he will only take the foods that he normally likes a great deal. Fortunately these are the easily digestible carbohydrates, namely, custards, jellies, junkets, honey, malted milk, ice cream, simple cookies, lump sugar, hard candies, crackers, etc. These foods also cause increased thirst because of their sweetness, which promotes the desire for fluids, such as sweetened fruit juices, sweetened tea, gingerale, broths, milk, etc. Salty crackers, which children like, also promote thirst. When vomiting is present, milk will often aggravate it, but in the absence of vomiting or tympanites, milk provides an excellent and well taken food. Skimmed milk is preferable, as fats of all kinds are wisely restricted in the diet because of the slower emptying time of the stomach during febrile states. It is not a good plan to force the child to eat, as it frequently only results in vomiting and may lead to a persistent anorexia. Most children, not too sick, fed small amounts frequently, with a little coaxing will take enough simple carbohydrates and fluids to tide them over the acute febrile days. As soon as the child's appetite returns, and it usually comes back with a "bang" during convalescence, the child may have a full diet, providing there is no gastrointestinal contraindication.

*Fluids.* The usual order given to the attendant is to force liquids. This can be greatly overdone. It may considerably disturb the child's much needed rest, because of frequent awakenings to administer fluids and more awakenings to urinate them. Besides, it may lead to vomiting, when more fluid will be lost than is taken in. A very simple method available to the attendant, to judge whether a child has had sufficient liquid is not alone to measure the actual amount imbibed or excreted, but to observe the color of the urine. If the urine has its natural light yellow color, enough fluids are being taken; if a deep amber color, not enough fluids are being taken and if the urine looks like water, too much fluid is being forced. Seldom is it necessary to administer fluids in any way except by mouth, so long as the urine retains its normal color. The physician can more scientifically determine whether the child is receiving sufficient fluid by determining the specific gravity of the urine.

In the more severe cases, when the child continues to vomit or have severe diarrhea or is too dyspneic or too sick to take adequate fluids by mouth, the intravenous gravity drip is life saving. This is a relatively easy method of administering fluids once the technique is mastered, and much less painful and annoying to the child than the subcutaneous route. When dextrose and fluid are urgently needed, as in collapse, ketosis, anuria, etc., the intravenous method is the one of choice. In older children an arm vein can fairly easily be punctured, and in younger children an ankle vein just anterior to the internal malleolus of the ankle can easily be dissected out. Of course, all apparatus and solutions must be especially prepared for intravenous injections. The usual fluids given are 5 per cent or 10 per cent dextrose in normal saline or Hartmann's or Ringer's solution. The drip should average about 40 to 60 drops a minute, which will not overwhelm the circulatory system with sudden large increases in the water content of the blood. The output, color and specific gravity of the urine are again the guide as to the amount and rapidity of the injections. Avoid giving too much fluid.

When intravenous fluids cannot be given for whatever reason and parenteral injections of fluids are necessary, the subcutaneous route may be employed, preferably in the thighs, by gravity in older children, by syringe injections in infants—never in the chest, abdomen or back areas in cases of pneumonia. Normal saline and Ringer's solution are rapidly and well absorbed, while dextrose solutions are slowly and poorly absorbed subcutaneously. These subcutaneous injections are usually painful to children, causing considerable restlessness and at times a local anesthetic added to the solution is advisable.

Occasionally during vomiting or refusal to take fluids by mouth, rectal administration may be attempted successfully if there are no tympanites; 5% dextrose in normal saline is used. Because of lack

of co-operation this method is usually not successful under four years of age. A child of four years will retain 3 to 4 oz. every 4 hours, if the buttocks are held together for five minutes or so after the fluid is given, until the desire to expel it has subsided. The rectal drip method is not successful as a rule.

*Hydrotherapy* is at times a valuable adjunct. A fever that is not unduly high needs no reducing, as it is probably a valuable part of the normal mechanism for combating bacterial invasion. As we all know, a high fever in pneumonia is a better sign than a low one. If, however, the fever produces restlessness, lack of sleep, discomfort, delirium or convulsions, or there is hyperpyrexia, then measures may be instituted to reduce it. Sponging with tepid water and alcohol really has little effect on the fever, although it may refresh the patient. It may, however, subject the child to unnecessary handling, chilling and exposure. The Priessnitz, a light, tepid, wet flannel jacket about the body, enclosed in oilsilk, will often remarkably quiet a restless delirious patient and thus avoid other sedatives. It should be kept moist with tepid water. It can be left on indefinitely if the child falls asleep, as it soon takes on the temperature of the body and eventually dries out. An ice bag can be placed on the forehead, although most children fight against this. For extreme hyperpyrexia, cold packs and cold enemas may be used very cautiously.

*Drug Therapy.* Drugs play a minor role in the routine treatment of pneumonia in children, but if a definite indication exists they should be used to meet it.

*Sedatives* are the most important group. Aspirin in proper doses (from 1 grain at 1 year of age to 5 grains at 6 years or over), may be repeated as often as every 4 hours or so and is relatively harmless. It does relieve pain and discomfort, thereby promoting essential sleep and appetite. Alkalies, as the citrates, said to be of value in febrile conditions, can be combined with the aspirin. If the cough, pain and restlessness cannot be controlled by aspirin and hydrotherapy, then barbiturates may be prescribed or narcotics such as paregoric, codeine or even morphine to secure the essential life preserving rest. In fact, morphine may be a most valuable drug during a severe pneumonia, when quiet is very essential to life. Doses just sufficient to quiet the child should be used, i.e., gr. 1/12 in an 8 year old. It should not be used when there is much respiratory depression and breathing is an effort.

*Stimulants* are rarely necessary except in collapse, when adrenalin, hypodermically, in doses of 2 to 5 minims, is the most effective in bolstering the failing peripheral circulation and blood pressure. Caffeine sodium benzoate is also an excellent stimulant, but if used over any length of time may increase the cerebral excitement. Coramine is valuable. Whiskey is used by a number of good clinicians, especially in young, weak infants and asthenic children. Aromatic

spirits of ammonia on cotton, held before the nostrils, often is a quick way to overcome a sudden cyanotic attack.

*Expectorants.* When the secretions are tenacious and there is much coughing, any one of a number of expectorants may be used, such as syrup of ipecac, ammonium chloride, guaiacol and later during convalescence the iodides. Atropin is usually contraindicated except in a very wet pneumonia or edema of the lungs; as it thickens up the already tenacious mucus, thereby promoting a blocking of the bronchi, with resulting atelectasis.

*Local applications* such as counterirritant ointments, mustard plasters, etc., have been largely discarded, although occasionally in young children a mustard poultice seems to give some relief.

*Cathartics.* A daily evacuation is desirable and this can be accomplished by a mild laxative such as milk of magnesia, an enema or suppository, often depending on the mother's or child's preference. In fact, an enema every other day suffices if there is no tympanites, as there is not much residue as a result of the anorexia. Frequent enemas every few hours to combat fever are both useless and harmful. Drastic purging with castor oil, calomel or salts is definitely contraindicated and is weakening and disturbing to the child.

*Tympanites* calls for special consideration, as it is a manifestation of toxic ileus and is a grave sign. The upward pressure on the diaphragm is an added handicap by decreasing the available air space in the thorax. Ordinary enemas or the rectal tube and stipes may suffice, but when marked, the 1-2 3 enema consisting of 1 ounce of glycerin, 2 ounces of magnesium sulphate and 3 ounces of water is very valuable. Pituitrin hypodermically is of value, from m iii to xv, depending on the age of the child. Occasionally the intraperitoneal injection of this drug is lifesaving. It is well to avoid milk in the diet when tympanites are marked.

*Oxygen* has a definite place in the treatment of pneumonia in children. Oxygen should not be used just as a last resort for the benefit of the family nor should it be used unless a definite indication exists. The child with the ordinary pneumonia, who is comfortable and shows no respiratory or cardiac embarrassment, does not need oxygen. There is nothing specific about oxygen therapy other than its relief of anoxemia. Consequently, dyspnea or cyanosis are its best indications in children.

The tent method is usually much less distressing to the child than administration by nasal catheter, especially if a familiar plaything that the child has an affection for is also placed in the tent. Usually a 50% concentration of oxygen is started, and then as the disease subsides it is gradually reduced to 20% before removing the tent. The child should not be removed from the tent for unimportant things and subjected to the great shock of abrupt changes in oxygen tension, with the resulting sudden demands placed on his circulation.

The temperature in the oxygen tent is usually cool and the child may need warmer bed clothing.

The nasal catheter method also has its advantages. It is more economical and permits better examination of the patient, therapeutic procedures and nursing care without changing the amount of oxygen inspired.

*Blood transfusions* are not indicated in the ordinary case of pneumonia. However, in certain cases of pneumococcus pneumonia which are alarmingly toxic or in shock or collapse, a small intravenous transfusion of properly typed and matched blood seems to benefit them considerably and is apparently without harmful effects. In the mixed infection pneumonias, when they are prolonged into the second week as they often are, blood transfusions often seem to definitely start the patient toward recovery. In previously debilitated, anemic, malnourished children, often just recovering from a preceding contagious disease or those with low grade protracted pneumonias or sepsis, the supportive value of transfusion is certain, whatever the immunologic value may be. The danger of cardiac dilatation and overload can be avoided by giving slowly only relatively small amounts of blood.

*Specific Therapy.* Specific immune sera such as Felton's Type I antipneumococcus serum has not been used extensively in the treatment of pneumonia in children. First, because most pneumonia in children are not caused by the Type I pneumococcus, and secondly, the very favorable outcome in lobar pneumonia in children, the kind most likely to be caused by Type I. Another reason is the comparative difficulty in obtaining sputum from a child, as they do not expectorate. To stick a swab into the larynx of a desperately sick child is not an ideal therapeutic procedure. However, if the child is desperately ill with a pneumonia proved to be Type I, II or VIII, there is certainly no special contraindication to specific therapy.

Convalescent serum has also been used, but no definite conclusions can as yet be drawn as to its value. Here again the typing is essential, and if convalescent serum corresponding to the type pneumococcus is available, no harm can result from its use.

*Hospitalization.* Every case does not need hospital care. However, in severely ill pneumonias so many more life-saving procedures can be accomplished, if necessary, in a well-equipped hospital that I believe that is where this type of child belongs. He should, however, be carefully isolated from his neighbour for mutual protection from crossed and superinfections.

It goes without saying that complications of pneumonia, especially otitis media and empyema, should be carefully watched for and treated as and if they arise.

(*Illinois Medical Journal*, Nov. 1937.)

## THE RECOGNITION AND MANAGEMENT OF THE MORE COMMON CARDIAC CONDITIONS.

W. L. SHIPPEY, M. D.

*Poteau.*

The increasing incidence of heart disease and its subsequent mortality increases our professional obligation. It is our duty to be on the lookout for the earliest disturbances of function so that we may advise such a readjustment of habits and activities as may be necessary to avoid or delay more serious impairment. The symptoms in these cases are often of long duration but they are usually disregarded by the man whose health and vitality have been his boast and who is unwilling to admit to himself that he is not as fit as he once was. In a man of lesser sensitiveness or intelligence the symptoms may not be even noticed until collapse supervenes. Again the phenomena may be ascribed to some more apparent cause, too often by the doctor who makes his diagnosis from the patient's story and without adequate examination lulls his apprehension with a joke and a bottle of medicine.

It might be profitable to review the symptoms usually regarded as cardiac symptoms and ascertain the value of each as indicating heart disease. The most important symptoms usually designated as being cardiac in origin are dyspnea, edema, cyanosis, palpitation, pain, weakness and disturbance in cardiac rhythm.

Dyspnea as it occurs in heart disease indicates the inability of the blood to take up the proper amount of oxygen from the lungs. In pulmonary disease it may represent a similar imperfection. A patient with a paroxysmal type of dyspnea is too often superficially examined and regarded as having bronchial asthma or asthmatic bronchitis, the underlying disturbance being overlooked as in chronic nonvalvular heart disease.

A second myocardial group misdiagnosed frequently is the markedly edematous patient with a regular, not very rapid pulse, the urine containing albumin and casts being considered as a case of nephritis. With edema, however, the urine picture being due to passive congestion of the kidney as shown by the speedy disappearance of albumin and casts as a sequence to adequate cardiac therapy. Edema is one finding which, if independent in type almost invariably indicates organic heart disease.

Since cyanosis depends not only on proper oxygenation of the blood but also on certain vasomotor factors and certain drugs, it can be appreciated that cyanosis in itself does not indicate heart disease.

Palpitation is seldom an indication of organic heart disease as it occurs far more frequently in the thyrotoxicosis, effort syndrome, or it may mean simply the distension of the stomach or colon with gas.

Pain, if occurring in a younger individual almost never indicates organic heart disease. On the other hand, in an elderly individual pain may be the early and predominate symptoms of actual heart disease. Thus the symptom pain must be evaluated with discretion.

Weakness occurs so frequently in a vast number of medical conditions, that it can never be taken to mean heart disease unless accompanied by more significant findings.

The arrhythmia may be cardiac or extra cardiac in origin, but the presence of an arrhythmia presupposes a searching examination of the patient, often electro-cardiographic studies are required to determine the underlying pathology. These irregularities of the heart although but symptoms, have come to be considered as much in detail as clinical entities. That they are but symptoms must not be lost sight of. Frequently the removal of the underlying etiology is sufficient, however, it is often necessary to direct our treatment toward the relief of the arrhythmia.

Sinus arrhythmia, most common in occurrence is usually extra cardiac; but the pathology may be in the heart as in coronary thrombosis. It occurs more frequently in childhood. Speeding up the heart with exercise often causes this arrhythmia to disappear. It is usually functional unless the history indicates previous disease capable of permanently affecting the heart or because of improper use of digitalis. The point to remember is that no restriction of treatment should be instituted because of this irregularity alone.

The frequency that extra systole is found in routine examination of patients causes this symptom to be passed over lightly without its just consideration and while it is true that the very specialized tissues of the heart under certain circumstances probably are able to initiate spontaneous contraction it appears that under the usual normal conditions this function fails to be exercised. In the strictest sense we might consider all extra systoles pathologic. It is impossible to separate the nervous from the muscular influence that go into formation of these spontaneous beats. A point well to remember is that premature beats originating in the auricle are more likely to be from nervous influence. Those originating in the ventricle are more frequently muscular in origin. These premature beats are often present in hypertensive heart disease and often precede the onset of auricular fibrillation. They are more frequently due to toxicity from tea, coffee, alcohol, tobacco, over eating or improper food. Fatigue, loss of sleep or any situation which lowers the general level of bodily well being may cause them.

Auricular fibrillation and flutter for all practical purposes may be considered together. When the potency of the etiological factor is not so great they may occur in paroxysms. This is a valuable sign in early diagnosis. These irregularities are by far the most common occurring among the sick. However, they may occur as paroxysm

in healthy hearts from exertion, indiscretion in eating or drinking, or in methods of living. Rest, restriction of diet and treatment of intestinal disturbances may cause them to suddenly disappear. Quinidine, is a drug of choice in this situation. We find these arrhythmias associated with rheumatic fever manifestations, hypertension, coronary artery disease and hyperthyroidism. The purpose sought in their treatment is to reduce the ventricular rate as counted by the stethoscope to a rate ranging from seventy to eighty per minute. In ordinary cases diagnosed early this can be accomplished by using twenty m. tincture digitalis, or two grains of the leaves, t.i.d. Ordinarily in one week with bed rest this result is accomplished, then the dosage is reduced to maintenance to keep the rate within normal range. Sometimes we see these cases with urgent symptoms of failing heart or in extremis. They require rapid digitalization and there are several intravenous digitalis preparations on the market that are adequate to take care of this situation. Strophanthin in my opinion has no advantage here; however, it may be given 1/120 gr. repeated in two hours and again in four hours. Its action is slightly quicker than digitalis. Two conditions occur particularly in older persons in which digitalis and like drugs are contraindicated; first, auricular fibrillation of normal rate and without symptoms; second, an elderly person with marked congestive heart failure rates seventy to eighty with or without digitalis. To further reduce this rate is exceedingly dangerous, absolute bed rest and opium is indicated. In marked congestive heart failure with venous distension and cyanosis blood letting may be a life saving measure.

In the paroxysmal tachycardia we must differentiate those of supraventricular origin and those of ventricular origin. The former commonly occur in cases of patients without important heart disease due chiefly to toxic or nervous influences, yielding to mild sedation and reassurance. Such a simple procedure as ocular pressure over the carotid sinus may suffice to end the paroxysm. Ventricular tachycardia, on the other hand, generally occurs only in the presence of serious myocardial insult. It is not uncommon for independent ventricular contraction to result from digitalis intoxication or from myocardial infarct. Serious impairment of the circulation may result and render it advisable to employ measures designed primarily to abolish the abnormal rhythm. In most instances the attacks subside spontaneously before this occasion arises.

Alteration of ventricular contraction occurs only in the presence of grave myocardial embarrassment. Continued alteration is of serious import. It is not a disease entity but evidence of serious impairment of myocardial function. Its correction rests only upon measures that restore the myocardium to a more normal status.

It will be observed that alterations perhaps the gravest of continued arrhythmia in common with sinus arrhythmia, the simplest,

illustrates the principle generally applicable to all. It is a sign, not a disease. Consideration must be given to the cause, and treatment must be directed at the heart.

There are a number of diseases frequently misdiagnosed as heart disease. Chief among these being gastrointestinal disorders, incipient T. B., and emphysema. Effort syndrome or so called "soldiers heart" is probably mistaken for organic heart disease more than any other condition. Any normal individual upon severe exercise will exhibit the symptoms of dyspnea, cyanosis, palpitation, precordial pain, weakness and even nausea and vomiting. In short, these are the normal symptoms of "exertion" or "effort." The victims of this condition present the same symptoms in severe form, oftentimes on slight exertion, more often on mere emotional exertion. The differential diagnosis is sometimes difficult but here the heart is of normal size and these individuals never have edema. The physician who recognizes this condition and successfully assures his patient that he does not have an organic heart disease is doing a real service and alleviates a mental hazard that would otherwise prove disastrous. Bromides are often the complete menu in these cases.

The condition of thyrotoxicosis may simulate heart disease in that the symptoms of palpitation, pain, and weakness are sometimes quite marked. Truly enough such a condition will eventually result in cardiac damage, because of the rapid rate and possibly because of the specific toxic effect on the heart muscle. However, if the thyrotoxicosis is removed early there is no apparent damage and several months following operation the heart will be perfectly normal. At this point I might profitably add that we should be wary of diagnosing a systolic murmur heard at the apex and not transmissible as being organic in character. This is often confused with mitral stenosis, but the latter is slightly presystolic, in time most generally accompanied by a thrill on palpitation; pulsation is usually prominent over the region of the apex beat, and the pulmonic artery.

I have perhaps over emphasized the clinical diseases which present so called cardiac symptoms but are not due to organic heart disease, therefore, the question may well arise as to the criterion on which to make our differential diagnosis. If the heart is enlarged there is invariably an organic cardiac lesion; on the other hand, if the heart is not enlarged, organic heart disease is practically ruled out. The one exception being possibly that of general arteriosclerosis where angina pectoris is the presenting symptom complex.

The history of an etiological factor is helpful in determining the presence of organic heart disease such as rheumatic fever, chorea, repeated attacks of sore throat, diphtheria, and in elderly people arteriosclerosis. A diastolic murmur always indicates organic lesion of the heart as it can only mean a valvular lesion. The presence of

dependent edema, providing other causes of edema can be ruled out, is a definite indication.

We classify cardiac disease in three groups: rheumatic heart disease, luetic heart disease, and arterio sclerotic heart disease. Of course, there are a number of other cardiac conditions such as congenital heart and various types of endocarditis and pericarditis, but for the most part our cases in this section can be placed in one of the above groups. These groups may be also separated somewhat as to their ages. Rheumatic heart disease makes up the majority up to twenty-five or thirty years. Luetic heart disease occurs chiefly from thirty-five to fifty years, while arteriosclerotic heart disease is usually found in persons past fifty.

The story of rheumatic heart disease is a familiar one, a child of one to ten years of age develops rheumatic fever or chorea, they usually recover and frequently no cardiac involvement is noted. They then go for a period of months or years and develop a similar attack. Usually during this second attack evidence of cardiac involvement is manifested. This may be a mere systolic murmur at the apex or a severe pericarditis with effusion. They again usually get better but from then on cardiac symptoms are usually present in the form of myocarditis, adhesive pericarditis, etc. They have subsequent attacks of rheumatic fever but with each succeeding attack the joint symptoms are less marked and the cardiac symptoms are more in evidence. Tonsillar infection usually precedes or accompanies these attacks. The course of the disease is not always so text book, however. In fact a large number of these rheumatic heart cases have the first knowledge of their handicap on the application for life insurance or working papers. There is no hint in their history of previous rheumatic infection. This lends emphasis to the belief that a large number of these cases are subclinical; in other words, before the inflammatory process in the heart has gone far enough to produce physical signs or definite symptoms, fairly extensive involvement may have already occurred. Then I think it would be wise to assume in spite of the absence of proof, that the heart is always involved, even when the manifestation is only chorea. The entire heart is invariably involved; the pericardium, myocardium and endocardium being damaged although one part usually predominates.

Then if we intelligently manage rheumatic cardiacs we must realize that the condition of the heart is but part of the picture of an infectious process. If the patient is ambulatory two questions must always be uppermost in our minds; first, and most important, is the infection active? second, is there evidence of decompensation?

Since the disease is an infection the exact etiology of which is still unknown the best we can do is to try to help each individual keep as close as possible to his optimum state of health and to

increase his resistance to infection. This means attention to his diet, the amount of rest and recreation he gets. If he already has evidence of cardiac involvement, his activities should be regulated so that it approximates his full capacity, but never to quite reach or go beyond it. Infected tonsils or other abnormal conditions should be removed; we must be alert for evidence of the return of active infection. Digitalis is a valuable adjunct in treating these patients, even in the absence of auricular fibrillation. Often they are able to lead a fairly active existence on digitalis, whereas without it, they become cardiac invalids. When decompensation occurs these cases of course, acquire absolute bed rest. Sedatives and narcotics should be given to insure their rest, if after a few days the signs of failure have not diminished, the process of digitalization should be completed. If this does not suffice theoscone and diuretics of this group may be of value. If the edema still exists mercurial diuretics salyrgan, or mercepeine are in order. The latter may be used in the form of rectal suppositories. Salyrgan is best given intravenously. The value of either is accentuated by the administration of ammonium chloride in full doses twenty-four to forty-eight hours before the administration of the mercurial diuretic.

*Luetic Heart Disease:* The pathology underlying luetic heart disease, is also very characteristic and should be constantly kept in mind. It must be remembered that the onset of heart trouble from this cause occurs usually after a latent period, averaging sixteen years, at a time when no clinical sign of luetic infection is present. The pathology invariably begins in the aorta just above the aortic ring, thus we have aortitis. From this point the process extends over the arch of the aorta in which case we may look for the clinical picture of aortic aneurysm. It may progress toward the valve and involve the coronary vessels. In this case the clinical picture will be that of angina pectoris, coronary thrombosis, etc. Lastly it may progress downward to involve the aortic valve, either apparently skipping the coronaries or involving them as well. This type of pathology will produce the clinical picture of aortic insufficiency. The treatment of luetic heart disease is very unsatisfactory. These patients usually die within two years of the onset of cardiac symptoms although the exceptional case of aneurysm lives much longer. Active antiluetic treatment, is definitely contraindicated and unquestionably shortens the life of the patient. Potassium iodide in large doses gives the most relief, particularly if pain is a factor. In the presence of decompensation digitalis, of course, indicated, but frequently does little if any good.

*Arterio Sclerotic Heart Disease:* To-day one-fourth of all the deaths above the age of fifty is due to hypertensive heart disease. The cardiac disturbances as a result of this condition, have as their pathological background sclerotic lesions in the coronary vessels

which impair the nutrition of the heart muscle and frequently interfere with the normal condition of the cardiac impulse. Also there is a change in the heart itself because of a sequence of changes due directly or indirectly to the increased systolic and diastolic pressures. As long as the hypertrophied heart can maintain a pulse pressure one half as great, as the elevated diastolic pressure a fairly adequate circulation is maintained. For this reason a large number of these cases are not seen until irreparable damage has been done. This condition is one of the more frequent causes of chronic heart failure or failure that is slow in its progression. Acute heart failure cases admit but of relatively little opportunity for lack of recognition but these slow progressive failures tax our clinical ability, for it is here that definite symptoms appear indicating organic heart disease, but are frequently misinterpreted.

Often these patients are exhausted, without their usual strength. Sooner or later dyspnea appears, first on marked exertion, later on the slightest provocation, with this orthopnea. Cyanosis is often very slight. Edema in the dependent portions of the body begins to make its appearance; pulmonary edema may be present, and more frequently ascites. The blood pressure is reduced below its usual level, the pulse pressure becomes less and less. At about this stage irrespective of the pathology the arrhythmia appears. Gastro-intestinal symptoms are complained of, nausea, flatulence, and distress after eating. These symptoms are due to enlargement of the liver, congestion of the intestinal mucosa and ascites. Jaundice frequently appears due to fibrosis of the liver interstitium as a result of chronic liver congestion. The amount of urine is decreased. The specific gravity is increased, cast and blood cells appear in the urine. Nitrogenous retention in the blood serum may be found. Cough appears and a rusty bloody serum is expectorated. Considerable areas of almost inflammatory character appear in the lungs. The result of congestion and edema of the lung tissue. Precordial distress may be marked or slight; there is peripheral venous and capillary congestion. Hemorrhoids may appear. Anemia develops, mentality is slowed, headache is bothersome. Menorrhagia during menstruation may occur. Eye sight and the special senses wane. There is no function or part of the body that does not suffer in these chronic cases of cardiac inadequacy.

If we recall the mechanism of the process and take a careful history, and make a close inspection, put these together with our findings on auscultation and percussion there is small probability that we will be misled in our diagnosis.

In treating these cases it is often difficult to tell when active treatment becomes imperative. Cases with pathology in which chronic failure is likely to occur should have routine examinations.

Very small doses of digitalis may keep these patients in good health and comfort for long periods. It must be individualized to the patient.

Rest is all important. This must not be overdone, but prescribed in individual doses. Also physiotherapy is important. Laxatives are frequently indicated. Salines are probably the most valuable because of their dehydrating effect. Calomel should be remembered, it often acts as diuretic as well as a cathartic.

Diuretics are of recognized value as theocine and caffeine. They also have a stimulant action on the heart. It must be remembered that they are also cerebral stimulants and may cause insomnia and irritability. Ammonium chloride in full doses is a valuable diuretic.

Sedatives are often indispensable and bromides or chloral hydrates are not to be displaced by any of the newer hypnotics. If these do not work we must resort to an opiate. Vaso dilators are indicated for symptomatic use rather than as a routine treatment for the reduction of hypertension. In hydremic cases fluids must be restricted. Salt foods curtailed. Sweating favored, mercurial diuretics may be required, and atropine is often of value. It may become necessary to resort to Southey's tubes to evacuate plural or peritoneal exudates.

This subject presents many points for discussion. It would be impossible to discuss all of them in the time allotted but I hope that by reviewing some of them I may be able to stimulate a discussion of a number of others and thereby completely review the subject to the advantage of all of us.

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## RADIATION THERAPY IN NON-MALIGNANT DISEASES. POSTOPERATIVE PAROTITIS.

KENNETH D. A. ALLEN, M.D.

Denver.

The use of radiation therapy in nonmalignant diseases, except perhaps those of the skin, has been neglected by radiologists. Many practitioners are not aware of its value and too few research workers are exploring this rather vast field. It is the purpose of this presentation to enumerate some of the non-malignant diseases in which benefit has been derived from treating with x-ray and radium; to present in some detail the effect of radiation therapy in postoperative parotitis, and to discuss briefly the manner in which x-ray energy produces its effect.

Edward lists 156 diseases which he believes have been benefited by radiation therapy. Table I is a list of non-malignant diseases

taken from our files, in which we have seen improvement or cure. This list excludes most of the skin diseases - a field of therapy which is well established.

Although postoperative parotitis is a relatively rare disease, it has been selected as a typical example of radiation treatment of non-malignant diseases because of its fatality and because x-ray treatment lessens that fatality effectively.

Twenty-six cases of postoperative parotitis are reported at this time. The impressions gained from these cases may be changed as our series grows larger, but since all the available literature reports only about three hundred cases we feel that something can be gained from this series.

### SYMPTOMS AND SIGNS.

The major symptoms and clinical signs present in our cases deserve brief discussion. The earliest intimation of the onset, which averaged three and three-fourths days postoperative in our series, is generally pain near the angle of the mandible. This is accompanied or followed quickly by tenderness in the same region and difficulty in opening the mouth. Swelling follows soon after and as a rule first appears immediately in front of the ear where the capsule of the parotid gland is less tense. Most patients complain of dryness of the mouth which is more than commensurate with the fever and

TABLE 1  
NON-MALIGNANT DISEASES IN WHICH WE HAVE FOUND RADIATION  
BENEFICIAL

|                                |                          |
|--------------------------------|--------------------------|
| Agranulocytic angina           | Herpes, zoster           |
| Arthritis                      | Herpes, corneal          |
| Aplastic anemia                | Hyperthyroidism          |
| Angioma                        | Hay fever                |
| Acne                           | Keloid                   |
| Aberrant lymphoid tissue       | Keratoses                |
| Actinomycosis—fungus infection | Leukemia                 |
| Adenitis, tuberculous          | Leukoplakia              |
| Adenitis, some inflammations   | Ludwig's angina          |
| Asthma                         | Mastitis, cystic         |
| Benign giant cell tumor        | Menopause                |
| Buerger's disease              | Menorrhagia              |
| Bronchiectasis                 | Metrorrhagia             |
| Carbuncle                      | Neuritis                 |
| Carrbuncle, urethral           | Otitis media             |
| Cervicitis, hyperplastic       | Osteitis fibrosa cystica |
| Cellulitis                     | Plantar warts            |
| Endometriosis                  | Papilloma                |
| Endometritis                   | Peritonitis, tuberculous |
|                                | Polyposis, colon         |
|                                | Paget's disease          |

|                        |                          |
|------------------------|--------------------------|
| Erysipeles             | Parotitis, postoperative |
| Essential hypertension | Pituitary, hyperfunction |
| Fibroid (uterus)       | Sclerosis, multiple      |
| Fibrosis (uterus)      | Skin diseases            |
| Furuncles              | Thymus                   |
| Gas bacillus infection | Whooping cough           |
| Prostatic hypertrophy  | Vernal conjunctivitis    |

which is not relieved by drinking water. Most patients seem very ill, depressed, and exhibit an anxious facies. The papilla region at the opening of Stenson's duct is generally inflamed and in severe cases pus may exude from this duct.

The literature reports indicate a relatively high febrile reaction (104°-105°F). The cause of fever in a case of parotitis is difficult to determine because most cases already have fever excited by the underlying surgical condition which the parotitis accompanies. Our experience would indicate that parotitis *per se* does not cause an excessively high temperature. Several of our cases had less than 100°, and yet suffered from large, painful swellings.

All of the symptoms and signs enumerated vary greatly in degree with the severity of the parotitis. See Table II. Bilateral cases generally become so the second or third day after the onset.

TABLE II

## CLINICAL SIGNS AND SYMPTOMS

*Onset average, 3¾ days postoperative*

Soreness at angle of mandible.  
Pain at angle of mandible.  
Tenderness at angle of mandible.  
Swelling, in front of ear, then over entire parotid and cheek.  
Fever.  
Dysphagia and difficulty in opening mouth.  
Redness in mouth at Stenson's duct.

## ETIOLOGY

Many theories concerning the cause of postoperative parotitis are presented in the literature. Though none have been proved to apply to all cases, the most important will be discussed. See Table III.

TABLE III.

## THEORIES OF CAUSE.

Infection—Septic thrombus.  
Infection—Staph. Aureus.  
Infection—Hematogenous.  
Hormone—Relation between parotid and generative organs.  
Trauma—Anesthetist.  
Salivary inhibition reflex plus infection.  
Parenchymatous degeneration—heat (fever).

Toxin—Inability to liberate toxin collected in gland.

Oral starvation.

Infection as a cause is a popular belief. Some insist that it is caused by Staphylococcus aureus which has ascended through Stenson's duct. Others who believe infection is very important think it reaches the parotid by the hematogenous route. Still others believe septic thrombi from a remote primary focus account for the disease. Some adherents of the infection theory insist that the dryness of the mouth, occasioned by postoperative withholding of fluids, excites the infection of the parotid. This is refuted by evidence which seems to indicate that there must be previous dental infection; yet, several of our cases occurred in young people with no history of dental infection. An effort to cultivate Staphylococcus aureus from the mouths of patients without dental infection failed, but the germs were grown in abundance from those with dental infection.

Throughout the rather meager literature on postoperative parotitis, reference is made more than once to the hormonal relationship between generative organs and the parotid gland, with the suggestion that traumatism to the ovaries in abdominal section may be a factor. This idea doubtless arises from the orchitis-parotid relationship in epidemic mumps. Too many cases in males, and females where the generative organs are not traumatized, argue against this conception. Trauma of supporting the jaw by an anesthetist is suggested, but cases have occurred in operations performed under spinal anesthesia. Furthermore, acute parotitis occurs as an accompaniment of medical cases. Charlton cites twenty-one cases out of 470 medically treated gastric ulcers which were subjected to oral starvation. Incidentally, he also mentions 350 treated without oral starvation in which only two cases of parotitis developed.

Salivary inhibition by traumatism, dehydration, narcotics and reflex nervous inhibition from the point of operation, most often abdominal, is thought by Arnulf to give access to infection previously present in the oral cavity, thus creating an etiological combination of factors which does not occur very often. This might account for the rarity of the disease. Parenchymatous degeneration of the gland due to heat has been suggested. This theory does not account for those cases which have a relatively low fever. Another theory of cause of postoperative parotitis which has not found many adherents is that the gland, due to dehydration, trauma, etc., becomes unable to liberate toxins which it collects. It would seem that no single cause can be blamed for this serious disease and, indeed, it may develop only in the presence of complicated coincidence of etiological factors.

## TREATMENT.

Previous to the advent of radiation therapy, oral hygiene, supportive measures, and heat or cold externally to parotid region,

were the basis of all treatment. This still is common treatment in some communities and in some hospitals.

X-ray or radium therapy disturbs the patient little, if any. It is painless and harmless. The former is administered by wheeling the patient in bed into the x-ray department for two or three doses of less than five minutes each (100 roentgens, depending on the factors used); the latter by strapping radium over the parotid gland for three to fifteen hours (depending on the amount of radium, filtration, distance, etc.) Probably the x-ray treatment is more desirable to the patient because of the shortness of the dose. The results seem equally good with either.

It is interesting to watch the effect of radiation treatment. Improvement is generally quite prompt. The patient seems less ill, less depressed and has some amelioration of pain in from three to twelve hours after treatment. Within this time interval many can open the mouth easier and are more willing to accept nourishment and water. Some cases feel still better twenty-four hours after the first dose, though a few have a little more pain. If there is not a marked improvement, a second treatment twenty-four hours after the first generally causes rapid subsidence of all signs and symptoms except swelling. All but the very severe cases will be markedly better the second morning. In our series it took an average of 2.6 treatments (Table IV) to cause the major signs and symptoms to subside. We have noted that often a little symptomless swelling persists for eight or ten days.

TABLE IV.

## AVERAGE NUMBER OF DAILY X-RAY TREATMENTS.

|                        |     |     |     |
|------------------------|-----|-----|-----|
| Reported in literature | ... | ... | 2.7 |
| Our series             | ... | ... | 2.6 |

Postoperative parotitis should be considered an emergency. Radiation therapy should be administered as soon after discovery as is expedient. Though there was little difference in time in the complete disappearance of major symptoms in those cases treated as soon as discovered, and the group treated twenty-four hours later (Table V), immediate treatment is urged because of the prompt partial relief afforded by the first treatment. Unnecessary prolongation of the untoward symptoms of parotitis jeopardizes the final result with any patient experiencing a stormy surgical convalescence. Furthermore, in the few cases treated later than twenty-four hours (Table V) after discovery, the disappearance of the major symptoms was very much delayed.

TABLE V.

## RELATION OF TIME BETWEEN DISCOVERY AND TREATMENT, TO RECOVERY TIME.

|                             |                        |
|-----------------------------|------------------------|
| 10 Cases, treated at once,  | recovered in 4.3 days. |
| 11 Cases, treated next day, | recovered in 4 days.   |

|                                                                |
|----------------------------------------------------------------|
| 2 Cases, treated 48 hrs. after discovery, recovered in 6 days. |
| 1 Case, treated 72 hrs. after discovery, recovered in 8 days.  |

## MORTALITY.

Since postoperative parotitis is a complication of a surgical disease plus operation, most of them major operations; and since the complication occurs at an average time of three and three-fourths days after the operation (Table II), it is difficult in fatal cases to determine whether the cause of death is parotitis or the surgical condition itself. In our series of twenty-six cases treated by radiation, three, or 11 per cent, died. In each of these fatal cases it appeared to the radiologist and the surgeon that the parotitis was not the cause of death. However, this series of twenty-six radiated cases is compared with a series of ten non-radiated cases in the same hospital; 40 per cent of these were fatal cases. Some of these four probably did not die as the result of parotitis; therefore, it is thought better to compare the mortality percentage of radiated with non-radiated, as if all deaths had been caused by parotitis. The same method is used in comparing the groups reported in the literature. We believe it is fair to assume that as many deaths were caused by the surgical condition in the non-radiated as in those which received x-ray or radium therapy.

Grouping our series with those of Rankin and Palmer (Table VI), Green and Knupper and Hummel, we find that 42 per cent of all non-radiated cases are fatal. This group is compared with another group of radiated cases presented by the same authors and in addition a series by Bowing and Fricke (Table VII). Of this total of 242 radiated cases, only on average of 13.4 per cent died. Thus, it would seem that radiation treatment will salvage 67 per cent of those cases of postoperative parotitis that would otherwise die.

TABLE VI.

## MORTALITY OF NON-RADIATED CASES.

|                             |                      |     |              |
|-----------------------------|----------------------|-----|--------------|
| Rankin and Palmer—58 cases  | ...                  | ... | 39 per cent. |
| Green —Reviewing literature | ...                  | 58  | „            |
| Rankin and Palmer—79 cases  | Reviewing literature | 46  | „            |
| Allen —10 cases             | ...                  | 40  | „            |
| Knupper & Hummel—21 cases   | ...                  | 28  | „            |
| Average                     | ...                  | 42  | „            |

TABLE VII.

## MORTALITY OF RADIATED CASES.

|                                      |     |                |
|--------------------------------------|-----|----------------|
| Bowing and Fricke —164 cases         | ... | 19.6 per cent. |
| Rankin and Palmer — 20 cases         | ... | 20 „           |
| Knupper and Hummel— 32 cases         | ... | 3 „            |
| Allen — 26 cases                     | ... | 11 „           |
| Average deaths, irradiated cases     | ... | 13.4 „         |
| Average deaths, non-irradiated cases | ... | 42 „           |
| Salvage by irradiation               | ... | 67 „           |

## RADIATION EFFECT ON LIVING TISSUES.

Just how does radiation affect the cells of living tissue to bring about beneficial results in a large number of non-malignant diseases? Authorities have not agreed on any one answer to the question. Universally, at this time, small doses are used in this group of diseases. Hitherto the question has been loosely answered by suggesting a "stimulating" action of the rays. It has been quite common to speak of "stimulating doses." There is little to justify this terminology.

The many types of cells of which the human body is composed have a sensitiveness to radiation which is quite specific for each type. The sensitivity of the different types decreases in somewhat the following order:

1. Young white cells of the blood.
2. The germinal portion of the ovary and testicle.
3. Certain cells in the bone marrow and the lymphatic system.
4. Thymus.
5. Skin and appendages.
6. Intra-abdominal visci.
7. Connective tissue, muscles, cartilage, bone, fat and nervous tissue.

Sensitivity to radiation and the change resulting therefrom is actuated by certain physical and biophysical influences:

1. Ionization of atoms composing the cell.
2. Maturation of cells.
3. Change in permeability of the cell membrane.
4. A change in the cytoplasmic viscosity.

The inflammation of the tissues resulting from the deleterious and abnormal combinations of amino acids to produce so-called toxic substances is manifested in the body by certain microscopic phenomena:

1. Leukocytic infiltration.
2. Intracellular edema—permeability.
3. Intercellular edema—permeability, etc.

Let us consider the radiation effects and the inflammation effects together.

Ionization, or a tendency toward ionization, of the countless atoms of which a cell is composed may be the fundamental actuating phenomenon to all radiation effect. Disturbance of the atomic balance or stability, for instance, may be the basis of the hurried maturation or hastening through the life cycle of certain white blood cells which occurs when x-ray energy impinges upon them. This maturing effect was clearly demonstrated by Issacs and latter subscribed to by Allen and Dickey. The premature maturation of small lymphocytes and polymorphonuclear leucocytes may result in some disintegration furnishing strange protein combinations of amino

acids and thus, in the case of parotitis, possibly producing a foreign protein effect deep within the gland itself. Does it require too much imagination to suspect that these new formed proteins may antidote those produced by the inflammation? Certain it is that the inflammatory process has furnished an abundance of leukocytes for the x-ray to work upon. If not an antidote, this new foreign protein may encourage phagocytosis or beneficial biochemical reactions. Possibly this maturation ages young primitive blood cells to a stage at which they can act against the pathologic condition present. (Certain it is that the inflammation has placed an abundance of leukocytes in the radiated area.)

A third effect which again really depends upon the ionization tendency of x-ray and radium energy is such a change in the delicate electrical balance (hydrogen-ion content) of the specialized protein which is condensed into the functioning cell membrane, that the permeability of this structure is definitely affected. The nourishment, elimination, and respiration of the cell are all profoundly affected. One result of the toxin-produced inflammation is intra and inter-cellular edema which can only result from changed cell membrane permeability. Is it possible that the very small doses of x-ray and radium used to benefit these non-malignant inflammatory diseases corrects this disturbed permeability by its own known capacity of influencing permeability?

Radiation not only affects the cell membrane but also its cytoplasmic content. A changed viscosity has been repeatedly shown by workers in this field.

To determine, then, just how a small dose of x-ray or radium reduces an inflamed, swollen, infected gland and renders it more capable of combating the toxic protein elements produced by and constituting (exo-toxin and endo-toxin) the invading bacteria, requires an explanation of the relation of the factors of radiation effect to the factors of inflammation. This is a complicated problem requiring forceful and efficient research in biophysics. Until this question is answered, empirical radiologic treatment is justified by the clinical results, just as it is in other specialties of medicine.

## SUMMARY.

1. X-ray and radium therapy has proved to be beneficial to many non-malignant diseases. Some of these are enumerated.
2. Radiation in proper early doses will salvage at least 67 per cent of those who would otherwise die of postoperative parotitis.
3. A brief discussion of the cell and tissue effect of x-ray and radium is offered.

(Colorado Medicine, November 1937.)

## A NEW TREATMENT OF PULMONARY TUBERCULOSIS

BY H. S. MAGUIRE, LL.M.R.C.P. & S. (IRE.),

Queenstown.

The treatment of this disease falls naturally under two headings, which are the stimulation of body resistance and the destruction of the bacilli.

### BODY RESISTANCE.

Under this heading the action of iodine and calcium are to be considered.

An examination of the fæces for the eggs of intestinal parasites should be made in all cases, as a surprisingly large number of people, harbour parasites. Thymol, or any other efficient intestinal antiseptic, should be given, if necessary, as a preliminary to treatment. Bilharzia eggs should be looked for in the urine, and treatment given if they are found. A Wassermann blood test should be made, and antisyphilitic treatment given if the test is positive. These precautions ensure that any additional drain on the body resources, apart from tuberculosis, is rectified.

*Iodine.*—The administration of iodine increases the proteolytic action of the blood and leucocytic activity, which lead to an increased inflammatory reaction around the tuberculous nodules and increased elimination of the products of cell destruction. Iodine stimulates the thyroid gland, and increased thyroid activity causes increased parathyroid activity.

*Calcium.*—Increased parathyroid activity enables the body to maintain the blood calcium at the necessary level of ten milligrammes per one hundred cubic centimetres. This level is necessary for tissue repair. Increased parathyroid activity rapidly uses up all the available blood calcium, and therefore it is necessary to replenish supplies. This is best done by giving raw eggs beaten up in milk twice a day, as in this way not only calcium but also vitamins and tissue-building proteins are supplied. Calcium lactate can also be used. The daily administration of calcium also decreases the clotting time of the blood, and this is of the utmost importance in the control of a tendency to hæmoptysis.

*Eucalyptus.*—The action of this drug is of importance on account of its disinfectant and bactericidal properties when excreted through the lungs and bronchial tubes. It must be used with caution as it may cause gastritis. In such cases its action can be utilized by an inhaler in the sleeping rooms, or it can be given separately after each dose of medicine, so that its action can be controlled and as much given as will be tolerated.

*Camphor.*—This drug acts in three ways: (1) As a heart stimulant; (2) as a cerebral sedative; and (3) as a bactericide.

As a heart stimulant camphor increases the rapidity of the heart's action and thus supports the iodine in its eliminative and repair action, and so tends to hasten the repair process.

As a cerebral sedative camphor discourages excessive coughing. This is especially valuable in cases of hæmoptysis. The patient as a rule sleeps well, and on awaking in the morning clears his bronchial tubes by coughing. It is noticeable that the sputum rapidly becomes less muco-purulent and more watery. There are no after-effects.

The bactericidal properties of camphor are effective when the drug is given in sufficiently large doses. In my experience, patients will stand much larger doses of this drug than was formerly supposed. I have treated over two hundred people with the following does with beneficial results.

In the following doses each c.c. of olive oil contains 3 grs. camphor.

First day: 2 c.c. camphor in oil injected intramuscularly, 6 grs.

Second day: 4 c.c. camphor in oil injected intramuscularly, 12 grs.

Third day: 6 c.c. camphor in oil injected intramuscularly, 18 grs.

Fourth day: 8 c.c. camphor in oil injected intramuscularly, 24 grs.

Fifth day: 9 c.c. camphor in oil injected intramuscularly, 27 grs.

The maximum injection of 7 grs. daily can be repeated up to the end of two weeks, dating from the date of the initial dose of 6 grs. The patient should then rest for a week, while continuing his medicine daily. The injection of twenty-seven grs. daily can then be renewed and kept up for two weeks, when another week's rest is given. This fortnightly injection treatment can be renewed as often as is necessary provided there is a week's rest in between each course of injections. As a rule not more than three series of fortnightly injections are required.

A suggested mixture for tuberculosis patients:—

|                     |     |     |            |
|---------------------|-----|-----|------------|
| Tr. iod. fort       | ... | ... | m. 34.     |
| Ol. eucalypt        | ... | ... | m. 17.     |
| Chloroform pur.     | ... | ... | m. 17.     |
| Magnes. carb. levis | ... | ... | dr. 10.    |
| Ferr. et amm. cit   | ... | ... | dr. 2½     |
| Aquam               | ... | ... | ad oz. 20. |

Shake well.

1 oz. four times a day in a pint of water after meals.

The excess of magnesia in the mixture protects the stomach against undue irritation. The object of giving each dose in a pint

of water is to dilute the mixture still further and so reduce the tendency to gastric irritation.

This mixture is palatable and does not irritate the stomach when no previous tendency to gastritis has existed.

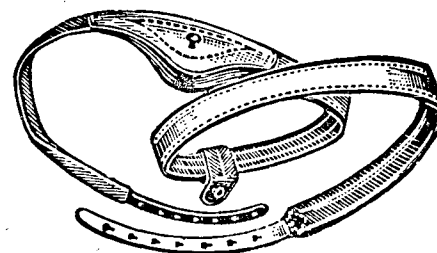
Iodine can be given in other ways. Whatever form of iodine is used the important thing is to see that the patient gets no less than the equivalent of six to eight minims of tincture iodine fort daily. This amount can be given over long periods with absolute safety. When adding the choloform to the mixture the bottle must be well shaken so as to ensure that the chloroform is well mixed with the water and other drugs. As the eucalyptus oil tends to lie on top of the mixture and the magnesia sinks to the bottom, it is essential that the bottle should be well shaken before each dose is given.

The combined effect of this injection and medicinal treatment has given rapid and effective results in over 200 cases in native locations. The degree of vigour resulting from the treatment depends on the amount of lung tissue available when the treatment is commenced. The lungs consist mainly of elastic and infundibular tissue, and repair of this tissue when destroyed can only result in replacement by fibrous tissue. Therefore, though the disease may be arrested, return to full vigour is often delayed.

The tendency to hæmoptysis is always arrested by the calcium. Over and above this intensive treatment the usual graduated exercises and sun-baths and diet are recommended. In conclusion, I wish to point out that this treatment has been successful in the locations among natives, where special diet and other requisites of sanatorium treatment were not available.

When giving a large injection of camphor in oil it is better to divide it in two parts and inject it in different parts of the body. The routine adopted by me is to divide the first injection between the muscles of the right and left forearms, the second in the muscles of the two upper arms, the third in the two deltoids, the fourth in the two gluteals, and so back to the arm muscles again. The injection of the drug in two different parts of the body at the same time leads to a more rapid absorption and greater concentration in the lungs, while the prolonged action of the drug is maintained on account of the injection being intramuscular.

(S. A. Medical Journal Nov. 13th 1937.)



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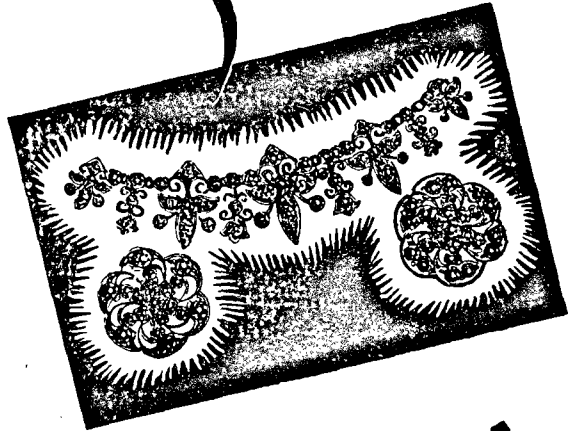
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## TREATMENT OF BRONCHIAL AND PULMONARY AFFECTIONS WITH PULMOTRAN

By DR. H. N. DASTUR, M.B.B.S.

Time was when clinicians were extremely sceptical about the value of camphor and essential oils in the treatment of pulmonary infections and regarded it as merely one of the countless remedies which have been recommended in these conditions and which, after a shorter or longer period of popularity, passed into oblivion. These doubts became more enhanced by the fact that their administration in sufficient doses interfered with the appetite or disturbed the digestion. It was only after the favourable experiences of the quinine treatment of lobar pneumonia that Cahu Bronner experimented these drugs along with quinine alkaloids in chronic and influenzal infections of the lungs and bronchi. The results have been so very encouraging that Quinine-Camphor-Essential oil combination is now gaining fast reputation as a specific in influenza and acute and chronic pulmonary infections. It has been, however, observed that the method of combining Quinine and Camphor as also the type and the quality of the essentials used have a very great effect on the therapeutic value of the preparation.

Recently a new Quinine and Camphor preparation by the name Pulmotran was tried by me in a number of cases the results of which were so definite that in the interest of the profession, I have to make the results public.

This preparation was tried by me in lung diseases with very encouraging results and even very chronic cases have shown relief of symptoms with two weeks. In acute influenzal pneumonias, a single injection of 2 c.c. intragluteally often has caused a fall in the temperature and amelioration of symptoms. In almost all cases, very soon after the administration of the drug, the patient's general condition has improved, expectoration was facilitated, followed by a rapid decrease in the amount of sputum.

It has been observed that following the administration of pulmotran injection, the patient's breath smells of the preparation within six to eight hours. Quinine produces its usual well-known action on the organism, while the essential oils and the camphor are excreted through the lungs, thereby disinfecting the bronchial passages. Camphor and volatile oils also act as vasodilators to the pulmonary vessels, thus ensuring proper blood supply to the lung tissues.

In chronic bronchitis and bronchiectasis, the initial injections are frequently followed by a slight increase in the amount of sputum ejected, and early disappearance of its foetid smell; then follows a progressive decrease until expectoration ceases entirely or only insignificant amounts are coughed up. It is noteworthy that as a

general rule the decrease in the expectoration does not manifest itself until one week has elapsed from the commencement of the treatment and this is attributed to the gradual accumulation of quinine in the lungs. Hence the necessity of prolonging the treatment for at least two weeks in chronic lung diseases. In bronchiectasis, larger doses—3 to 4 c.c.—daily seem to be necessary to ensure successful result. The administration of Pulmotran (Cipla) is unattended with shock or other untoward reactions. Intramuscular injection is virtually painless and free from irritation.

The following cases will help to illustrate the effect of Pulmotran in lung diseases.

*Case I:*—Male child, one year old, with severe attack of coryza and high fever, followed by Rales in the chest in 24 hours. Half c.c. Pulmotran was given and the signs in the lungs were much reduced, fever dropped to 99° F. Another injection on the next day completely cured the patient.

*Case II:*—Male, 38 years, with history of asthmatic attacks off and on. Bronchitis sets in first followed by wheezing sound in the chest. Pulmotran 2 c.c. injections were given daily for 6 days, followed by another six every other day. Attacks have not recurred for the last eight months.

*Case III:*—Female patient aged 48; history of chronic bronchitis for two years. Started with an attack of pneumonia. Coughs continuously worse at night. Has tried all drugs with no apparent improvement. Pulmotran 2 c.c. was given for six days continuously. Cough increased, sputum loosened. Another six injections were given on alternate days; cough and the expectoration diminished. A final course of six more injections given twice a week completely cured the patient.

*Case IV:*—Female aged 39 years, signs of bronchiectasis during 8 years. Pulmotran was given 4 c.c. at a time every 2nd day for three weeks; later given twice a week, same quantity. The patient is markedly improved and the cough is very much less with hardly any sputum.

### Extracts.

#### A RECONSTRUCTION OPERATION FOR OLD UNUNITED FRACTURE OF THE FEMORAL NECK.

PAUL C. COLONNA, JR. BONE & JOINT SURG. Vol. XIX, No. 4, Oct. 1937.

The author reports fifteen cases of old ununited fracture of the neck of the femur, operated by his previously described reconstruction

operation for this injury. "Very briefly, the essential features of this reconstruction operation are: (1) The sectioning, close to their insertions, of all the muscles attached to the region of the greater trochanter, preserving a thin layer of fibromuscular tissue over the upper end of the bone; (2) the removal of the loose head; and (3) the placing of the upper extremity of the femur deeply and firmly within the acetabulum and transplanting of the gluteus medius and the gluteus minimus group of muscles downward on the shaft of the femur as far as they will reach securely fastening them to the underlying bone."

The author considers three fundamental points in recommending treatment for this type of injury. The restoration of stability is important to secure adequate weight bearing. This is maintained by inserting the trochanter into the acetabulum of the innominate bone. stability is increased by the strong fascia of the thigh and upon the new insertion of the abductor muscle.

The maintenance of a satisfactory range of motion is important from the standpoint of walking, and also for relief of pain. It is imperative that no raw surfaces be permitted to oppose the cartilage of the acetabulum.

The third important point is the increase in length of an already shortened extremity. It was found by examining a number of adult femora that the greatest possible shortening by using the trochanter instead of the head of the femur was only three-fourths of an inch; the average being approximately one-half inch. This is due to the inclination of the neck of the femur. Pain has been found to be relieved by this operation but the cause of the pain is very difficult to determine. Whether this is due to lack of raw bony surfaces grating upon each other or to the increased motion and stability of the joint, is not known, but the fact remains that the pain is partially relieved.

Following the operation the patient is placed in a spica cast with the limb abducted and in complete extension. After two weeks the posterior part of the cast is removed below the knee, allowing exercise of the knee and the foot while the patient is on his abdomen. After four weeks the patient is placed in a well fitting posterior plaster shell or in a felt sling and active and passive movements are begun at the hip. The patient is not permitted to bring the leg in adduction, however, at this time. After five or six weeks the patient is permitted to get out of bed and is encouraged to walk. Physiotherapy is usually of value at this stage.

The complications of this series in which fifteen cases are described, the earliest of which was done in 1930, have been rather small. There was one death which was possibly a complication of the operation; this resulting nineteen days post operative from a probable pulmonary embolism. There was one case with a soft tissue infection but no bony involvement and a good result was obtained.

A third case has died from natural causes. In one case the stability of the hip was impaired, due to the fact that the patient fell and strongly adducted the leg and dislocated the upper end of the femur. She refused further treatment. However, she is up and about doing her housework. Thus, twelve of the fifteen cases are up and around with excellent range of motion; stable and relatively painless hips.

### THE EFFECT OF PREGNANCY ON MALIGNANT TUMORS.

BY FRANK R. SMITH, *New York City.*

*American Journal of Obstetrics and Gynecology*, October, 1937.

This is a report based upon a group of 54 patients suffering with malignant tumors who have also had one or more pregnancies occurring simultaneously or following the treatment of the tumor. All of these patients have come under the observation of the author.

While this is a reasonably small number of patients, it is a valuable report because most of the information about these associated conditions has been based upon the reports of isolated cases of malignant tumors complicated by pregnancy. There has been, therefore, a variance of opinion, most contending that the pregnancy had a harmful effect but others from their limited material concluding that pregnancy had a beneficial influence.

The rarity of the combination of malignancy and pregnancy is best explained by the fact that the majority of patients developing malignant tumors are beyond the child-bearing age or in the last decade of child-bearing age.

A summary is given of each of the 54 histories and quite elaborate tables presented for statistical review.

The justifiable conclusions which are drawn by the author from this group of patients furnish excellent crystallized opinion relative to the effect of these conditions and the best means of treatment. They follow.

#### " I. Concerning the Patient :

- A. Pregnancy is detrimental to, and should be prevented in patients having unarrested malignant tumors.
- B. Growing malignant tumors may be temporarily retarded by pregnancy but the growth is accelerated after the termination of the pregnancy.
- C. Pregnant patients with malignant tumors have a better prognosis :
  1. If the pregnancy is not interrupted ;
  2. If the pregnancy follows treatment of the tumor rather than occurring simultaneously with it. This is true

whether the length of life from the time of treatment of the tumor or the length of life from the beginning of pregnancy is taken for comparison. The latter gives a more accurate measure of the effect of the pregnancy upon the tumor ;

3. If, in patients becoming pregnant after the tumor therapy, more rather than less than two years have elapsed since the tumor therapy :
4. If, in the breast and nongenital groups, the patient is not aborted, regardless of the time relationship of the pregnancy to the occurrence of the tumor. This is possibly also true in the genital group, but in the early months of pregnancy the patient is usually aborted by the tumor therapy anyhow. In this series no patient in the genital group became pregnant after the tumor therapy ;
5. If the breast and genital tumors are treated before the end of the pregnancy. It is of distinct advantage to the patient to treat these tumors and ignore the pregnancy, but it is better for the patients with certain nongenital tumors not to be treated until the pregnancy is ended, especially with melanoma.
- D. As to the stage of the pregnancy (using four months as an empirical borderline) when the patient was first seen. If the patient is aborted there is some slight advantage in early over late, abortion in the nongenital group, but a distinct disadvantage in the breast group and total. All groups fared better if not aborted, regardless of the stage of the pregnancy when first seen.
- E. As to Parity : Abortion was especially disastrous to primigravid women, whereas both primigravid and multigravid women did about equally well if not aborted
- II. Concerning the Fetus :
  - A. Irradiation of breast and nongenital tumors in pregnant women has no tendency to produce malformed babies
  - B. In the genital group irradiation of the pelvic regions will usually produce abortion in the early months of pregnancy. This series sheds no light on the effect on the fetus of irradiation of the pelvis in the first half of pregnancy because no patient receiving such treatment went to viability.
  - C. In the latter months of pregnancy carcinoma of the cervix can be irradiated locally without affecting the baby or producing abortion.
  - D. Of 41 known viable normal offspring at birth, only 25 could be traced at the present time. These show no

evidence of any bad effects of tumor therapy at the present time (one to ten years of age)."

#### COMMENT

While this combination of conditions is rare, this report has a particular significance because malignancy is frequently suspected in the breast and genitals during pregnancy. From the information included in this article and from other sources, it is quite evident that the rules for diagnosis and treatment are practically unchanged during pregnancy. One must have positive evidence of diagnosis and then treat suspected tumor according to its character. It will be found most frequently that the tumor is not a malignant growth. This does not minimize the necessity for most careful study and biopsy examinations to prove the character of suspected malignant lesions associated with pregnancy as well as without.

#### TREATMENT OF EPITHELIOMA OF THE LIP BY ELECTRO-DESICCATION.

HOWARD MORROW, M.D., HIRAM E. MILLER, M.D., AND LAURENCE R. TAUSSIG, M.D., SAN FRANCISCO. *Condensed from Archives of Dermatology and Syphilology*. May, 35 : 821-830.

The authors describe the treatment of early stages of epithelioma of the lip which can readily be carried out in ambulatory patients. It is desirable to complete the destruction or removal of all neoplastic cells with as little damage to normal tissue as possible, in order to preserve function and to produce the best cosmetic result.

Surgical therapy results in a high percentage of cures, if properly done, but there is considerable loss of normal tissue and in most instances it is a hospital procedure, which adds to expense and intimidates the patient.

Irradiation also cures a large percentage and is of outstanding value in the palliative treatment of inoperable and extensive lesions. The chief shortcoming of radiation is that the resulting scar may, in course of time, exhibit the usual after effects of intensive radiation, such as atrophy, telangiectasia or keratosis. The damage done to adjacent normal tissue increases the difficulty of treating a recurrence or new malignant growth in the same area. There is also a lack of material for microscopic examination.

Cautery may be effective but all cauterizing methods sacrifice a considerable amount of normal tissue in order to be certain of destroying all malignant tissue.

Various combinations of these methods have been used, especially surgery plus irradiation.

For the past five years the authors state they have regularly treated epithelioma of the lip by means of curetage followed by electrodesiccation. The area is anesthetized by injecting 1 or 2 cc. of a 2 per cent solution of procaine hydrochloride around the lesion. The lip is compressed between the thumb and forefinger and the pulpy tissue removed by a sharp curet. This permits a more accurate survey of the extent of the field of the lesion than can be obtained by inspection and palpation.

In most cases there is little or no bleeding. A piece of biopsy tissue may be removed with a biopsy punch before curetting is started or the curetted material may be saved for this purpose. The growth frequently shells out showing a line of demarcation between it and the normal tissue. After curettage the area is treated with a rather intense monopolar current the tissue being desiccated to a depth of 2 or 3 mm.

The lesion is dusted over with an antiseptic powder once or twice a day. A dressing is rarely required. In the course of 10 days or two weeks the slough separates and the area heals in about six weeks. The resulting scar is frequently thick at first but in the course of a few months it usually flattens out, leaving a surprisingly insignificant slightly indurated area.

The one complication is hemorrhage ; it is encountered in about one in 12 cases and usually occurs when the slough separates. It is generally not severe and yields to the compressing of the lip for a few minutes between two fingers.

The treatment outlined is particularly adapted to early lesions which have not penetrated the muscle. Long standing lesions with palpable metastatic masses in the cervical lymph nodes are referred to the surgical or to the roentgenologic department. Instances of keratotic lesions of the lip which are only suspected of having undergone malignant degeneration are treated as if they were early stages of epithelioma. Most surgeons now believe that gland dissection is indicated only in the presence of palpable lymph nodes. The routine irradiation of the cervical region in the absence of palpable nodes as a prophylactic measure is of doubtful value.

The authors state that they have treated 139 patients by the method described. Of these 59 could not be traced. Of 80 who were traced, 66 are well at six months to five years after treatment, one cured elsewhere, two dead from cancer of the lip, eight died from other causes and three are not cured. A number of the patients classified as well have had recurrences which responded to the same form of treatment. The two patients who died of cancer of the lip had indurated, rather extensive lesions extending onto the inner surface of the lip and buccal mucosa ; we no longer treat lesions of this kind by desiccation.

Comment. The authors have succeeded in curing early epithelioma of the lip by electrodesiccation. They have recurrences just as men using other forms of treatment encounter.

At the present time we have close co-operation between radiologists and the plastic surgeon which allows for an opinion to be rendered at any stage of the treatment. The cases that are best suited to surgery are culled out and given the benefit of surgery.

It is true that a biopsy in a great many lesions is definitely desirable and some cases cover the non-malignant nature of the lesion.

Dr. Wyeth of N. Y. has been apparently very successful in the use of low monopolar currents applied to epithelioma. The author in this case uses a rather intense monopolar current.

#### LATE RESULTS OF EXTRACTION OF CATARACT. EDWARD JACKSON, M.D., DENVER:

*Archives of Ophthalmology* September, 1937.

Again Jackson makes a valuable contribution to ophthalmological literature. He makes the point that the statistics of any large eye clinic such as in India, Vienna, London or America fail to correctly evaluate the end result of a cataract extraction. The reason is obvious. The patient goes to the clinic and is operated and fitted with the first glasses after the lens extraction and in the majority of cases fails to return to the one who did the operation. This is much different in private practice, where often the patient can be followed to the end of life.

An instance is cited of a diabetic patient who had one eye operated in Vienna and the next year the other eye operated in Wiesbaden. Eighteen months later he was seen by the author. Examination showed him wearing a spherical lens which gave him a vision of 0.3 in each eye. When the astigmatism was fully corrected he had a vision of 1.3 in each eye. Another example is given of a woman, age 65, whose left eye was hopelessly damaged, probably from using it too soon after operation with a subsequent chronic uveitis which had left vitreous opacities.

Jackson points out "that ample time, often several months, must be allowed the eye for recovery after operative treatment that so disturbs its whole nutritive mechanism." He notes further that many times when both eyes of an individual have been operated, it is the eye that takes the longest to recover, that has the best result.

There are four cases in which cataract is complicated by glaucoma. Two patients had an increase in tension following needling

for capsular opacity. This was controlled by miotics. One other had a chronic glaucoma before lens extraction; vision was but slightly improved. The other was a lady, age 56, that had bilateral acute glaucoma while recovering from facial erysipelas. One eye required an iridectomy while the other recovered with the use of physostigmine. Ten or eleven years later the author saw the patients for cataracts. Glaucoma at that time was absolute in one eye. There was good light perception in the other eye: lens extraction gave her a vision of 0.1 which she had kept for two years afterward.

Four cataracts associated with tetany are reported. Calcium, parathyroid and thyroid were given ineffectually. Lens extraction gave normal vision in all four eyes.

The author's experience tends to confirm the idea that probably myopia may have something to do with the formation of cataracts. He reports that he has found that these eyes "bear extraction of cataract as well as most other eyes."

In regard to uveitis he says "The important point is that most causes of uveitis can be removed entirely, and if this is done long enough before the operation the history of previous uveitis is no bar to the extraction of the cataract."

A table of cases accompanies this article. It consists of forty-nine cases, age of patient at operation, age of patient when last seen, complications, vision before extraction and vision after extraction.

The technic of the operation, as it is done by the author is given in detail. Discussions by Dr. Allen Greenwood of Boston, and Dr. Edward C. Ellett, of Memphis, are included.

Dr. Jackson's closing paragraph: "Certainly the point that the general structure and the relations of the eyeball should be as little disturbed as possible in the operation for cataract is an important one to have in mind in every manipulation of the instruments that one makes at the time."

#### Medical News & Notes.

THE TINNEVELLY DISTRICT MEDICAL ASSOCIATION,  
PALAMCOTTAH.

*(Tinnevelly Branch of the Indian Medical Association.)*

A joint meeting of the Travancore Medical Association and the Tinnevelly District Medical Association was held at Cape Comorin, one of the most famous and frequented pilgrimages of All India importance, and a Sanatorium in the Travancore State, where the Bay

of Bengal, the Indian Ocean and the Arabian Sea Junction, on 23rd of April 1938. Thirty members of the Tinnevely District Medical Association and 41 members of the Travancore Medical Association were present on the occasion besides a number of non-medicos.

After light refreshments the meeting began under the Presidentship of Lieut. Col. T. S. Shastry, I.M.S.

Dr. K. RAMA AYYAR, M.B., B.S., (Andhra), Secretary and Treasurer of the Tinnevely District Medical Association, read the minutes of the monthly meeting held at the Headquarters on 26th March 1938 which were passed. The Secretary of the Travancore Medical Association, read the minutes of their monthly meeting which were passed.

Dr. P. S. Srinivasan, Government Headquarters Hospital, Palamcottah, read clinical notes of four Acute Abdominal cases which were operated and treated at the Headquarters Hospital, Palamcottah :—

1. A case of Acute Abdomen—Thrombosis of mesentery.
2. A case of Acute Abdomen—Acute mesenteritis.
3. A case of perforation of stomach.
4. A case of Acute Abdomen—probably perforation and peritonitis—not operated.

Rao Bahadur Dr. K. Raman Tampi, B.A., M.D., (Edin), the President of the Travancore Medical Association, delivered an interesting lecture on Guinea Worm Infection. Dr. M. E. Naidu of Nagercoil, stressed in a short paper the uses of Shark Liver Oil (a fish like the Cod) prepared at Nagercoil and around, in various diseases and said that it is more efficacious and cheaper than Cod Liver Oil.

After detailed discussion by the members, Lieut. Col., T. S. Shastry, I.M.S., summed up the salient and important features of all the cases and the two lectures.

Lieut. Col. T. S. Shastry, I.M.S., thanked the members of the Travancore Medical Association for their kind hospitality and for organising this Joint Meeting the first of its kind here, and for the excellent arrangements that were made for the same.

The closure of the meeting was followed by an artistic and romantic dance by a group of 20 young school going children of Nagercoil accompanied by sweet Karnatic Music dance.

#### NILGIRI DISTRICT MEDICAL ASSOCIATION.

A meeting of the above Medical Association was held on 8th May 1938 at the British Military Hospital, Wellington. Major Kelly, District Medical Officer, presiding.

Lt.-Col. K. P. Mackenzie, R.A.M.C., Officer Commanding, British Military Hospital, read a paper on "Intravenous Anaesthesia" and Dr. Simon of Keti gave a demonstration of two interesting cases.

The staff of the British Military Hospital were "at home" to the members of the Association.

## THERAPEUTIC NOTES.

### RHEUMASAN.

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