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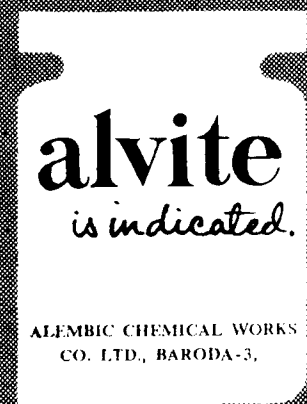
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VOL. 1 JULY 1958 No. 4

Long Fevers—difficulties in Management

By
DR. N. VAIDYANATHAN, M.D.
Professor of Medicine, Stanley Medical College, Madras

Every Physician gets his quota of fever cases. The shorter fevers are DIFFICULTIES ON THE PART OF THE PATIENTS AND RELATIONS.

CORRIGENDUM

Kindly read as "2.5 grains" instead of "2.5 grams" appearing in the 6th line from top right hand column of page 75—Vol. I No. 3 (May 1958 issue). The Printing error is regretted. —Editor.

controlled and patients tried, and inner they anxiety to The neces- at quickly, no doubt, self against al or hasty firm by his , to arrive ounds and riate treat- ie treatment vitably end ses, though cess unwit-

tingly sometimes. It is here that one feels the necessity for proper Doctor-Patient relationship. If the patient chooses a Doctor, he must have faith in him and the Doctor must act up to his faith. If the patient has not got that much faith in him, the Doctor would do well, to let the patient choose another Physician, in whom, he will have more faith. With the faith of the patient and the relations backing the Physician, he can go ahead confidently, in what may be a troublesome and long disease. As can be seen from the above, I have directed my suggestions to the Physician, as it is well nigh impossible to educate the members of the public in this regard. This can however be done appropriately, through general broadcasting methods on Health affairs by well known Physicians over the Radio, Press, etc., on appropriate occasions.

DIFFICULTIES ON THE PART OF THE PHYSICIAN.

IMPORTANCE OF DIAGNOSIS.

I have referred above to the difficulties caused by patients or his friends, but there are some type of difficulties brought about by ourselves; and these also require some analysis so that, we may beware of falling into those traps. Diagnosis forms the main stay of our work and needless to say, it is perhaps the most difficult part. It requires, in every case, the full application of all the accumulated personal experience and knowledge of the Physician and once a diagnosis is clear or reasonable factual grounds, the treatment in most cases is clear; specific where such specific remedies are available, and general supportive,

where such are not available, as in the case of some of the Virus infections. So, in the early stages the Physician is naturally concentrating on obtaining sufficient data for making a diagnosis; and treatment at this stage as more or less placebo or non specific in character.

ABUSE OR MISUSE OF THERAPY

At this stage, I would like to emphasise how wrong it is to start the indiscriminate use of strong drugs and antibiotics and chemotherapeutic Agents, now available, without proper diagnosis. A lot has been written and said about the abuse and misuse of these substances. Apart from the tremendous waste of money and material, it is good, to recognise that most of them are capable of harm also; and as such, have to be used carefully and under proper conditions. It is not yet fully realised that the early use of these agents often marks the course of the disease and makes the very diagnosis itself difficult. We Physicians, are likely to be strongly tempted to use these Drugs, in the hope of a relief by chance. I should like to say, that barring conditions of exceptional gravity and seriousness to the patient, which does not permit of delay, (for purposes of making a diagnosis.) these Drugs should not be used as a routine in initiating treatment.

DIAGNOSIS

A complete history of the onset, the course of the disease, till the patient comes under observation, followed by regular progress notes, maintained in orderly fashion, are all essential for proper diagnosis. As I shall refer to

later, frequent reviews of the position, may be required from time to time, to make sure, that the Physician is going on right lines or in cases where things do not seem to be shaping, as anticipated. The next point about diagnosis, is that, it is to a large extent dependent on the Physician finding some sign or symptom indicating localisation, without which he is very much in the dark. This again implies that while the fever is going on the disease is continuously progressing and the localising signs and symptoms, may occur at various or varying periods of the disease. *Natural corollary of this, is that, the Physician has to examine his patient often.* I shall put it, that it is our duty, at every visit, to do an over-all check of the patient and not to cursorily examine the patient and go away. Many times Physicians have missed the diagnosis simply because they have not cared to repeatedly examine the patient or due to some reason they missed examining the patient for sometime.

Even, when the condition has been diagnosed and the patient appears to be progressing satisfactorily, the need for continuing the check up at frequent intervals, exists; and the need for frequent reviews of the condition of the patient also exists. The need for such review becomes all the more necessary, in those cases where diagnosis is not clear or where the diagnosis made, has become suspect, because, the patient is not progressing according to expectations. I may say with confidence, that such reviews form our main stay in the treatment of the long fevers.

LABORATORY AND OTHER ANCILLARY AIDS

The importance of Laboratory aids as also of the other specialised methods of investigation like X-Rays, etc., in diagnosis, cannot be sufficiently emphasised. The Physician, who tries treatment without atleast a few necessary investigations, is at a great disadvantage. When facilities for such investigations are available, it is his duty to utilise them to the advantage of the patient.

The minimum and common investigations that will be required in almost all cases of the fevers, are well known and comprise of examinations of the Blood, Urine and Sputum by the usual ordinary methods. Special investigations on the tissues and other materials from the body obtained by Biopsies, etc., have to be undertaken in certain cases, in addition to the routine examinations. X-Ray examinations, either plain or with contrast material, are also necessary in many cases.

LOCALISING SIGNS AND SYMPTOMS

These become readily available on careful physical examination alone. In other cases physical examination will be negative throughout, but laboratory and other tests may bring out the localisation.

The common and convenient method of grouping these long fevers will be on the basis of:

(1) The pulse rate—those with a slow pulse rate and those with the increased pulse rate.

(2) On the basis of the severity or otherwise of the symptoms of onset

which are themselves sufficiently patterned to suggest diagnosis by themselves.

(3) Those associated with respiratory rate increase (in some cases even to the extent of Dyspnea.) This would suggest primary localisation in the respiratory organs in the large majority of cases; and referable to either the severity of the toximia or to possible electrolyte imbalance in a few other cases like Diabetic Acidosis.

(4) The leucocytic response of the body to the infection shown both by the total and differential counts, helps considerably to suggest the possible type of infection or process going on in each particular case. Leucopenia or Leucocytosis, moderate or high, and the relative proportion of the different cells will act as good pointers.

(5) Among the investigations, the blood examination is to a great value as it gives additional information by a finding of parasites or organisms in the blood smear or by blood culture. Presence of abnormal types of cells indicative of abnormalities of the Reticulo Endothelial system as occurs in cases of Leukamias, associated fever, are of additional help. The E.S.R. though not specific, is of considerable value particularly serial readings to indicate the progress of the condition.

(A). The commonest of the long fevers are *the enteric group*. It must however be borne in mind that most of the other long fevers may easily be mistaken for it. It has said that Malaria as an arch simulator. In my experience, I have found Typhoid fever as such of an arch simulator leaving the

diagnosis in doubt for a long time until the basillus Typhus gets caught in a culture. The diagnosis of Typhoid is therefore undoubtedly by culture of the Bascilus Typhosus, either from the blood or the motion or the urine or from the Gal Bladder tract, at sometime or other during the course of the disease. I have ceased to place much reliance on the widal reaction alone, except when confronted but definitely raising titres.

I had experience of cases of *Malaria simulating Typhoid* very closely, until a rigor on the 16th day with a rise of temperature to 106° degrees and finding of the parasite (through not always) and the prompt response to the suitable anti-Malarial drug reveals the diagnosis. I have also come across the vice versa a Typhoid case simulating bouts of *Malaria or sub-acute Bacterial Endo Carditis*, ultimately proved to be Typhoid from the blood culture. (Albeit done, due to the presence of other Typhoid cases in the houses or in the vicinity fortuitously). I need not dilate upon the varying clinical picture of Typhoid fever with which all Physicians are sufficiently familiar, except to state that diagnosis is sometimes long in doubt, even to the most experienced among us, and requires to be confirmed if possible in every case by isolating the Bacillus Typhosus.

The next common condition which has often been mistaken for Typhoid is *either Miliary T. B. or the long or a slow Pleural effusion*. Some of the characteristic signs of Typhoid fever are no doubt absent in these, from the beginning, and unless carefully noted their absence may be missed. I believe, the system

of checking up on the patients systematically at every visit will obviate these mistakes in diagnosis. Any how a Skiagram of the chest will often reveal the condition beyond all doubt; and is a necessary investigation in all long fevers.

One other condition which I have met with most commonly is *B. Coli infection* of the urinary tract. This is surprisingly common as fever without any localisation. While some authorities consider that presence of pus cells in the urine is necessary for diagnosis, I have had many instances, where urine did not show pus cells, but, grew rich colonies of B. Coli on culture of the urine repeatedly. In this group will have to be included the other infections by the various organisms Paracolon, Pyocyanous, Feceals Alkaligens Proteus, etc. The routine urine culture is thus strongly indicated in many of these fevers, as the urinary infection may coexist as an additional factor.

Typhus fevers are not uncommon and many are perhaps missed. I believe that many of these Typhus cases will be recognised if the appropriate Weil-Felix reaction is done as a routine on all long fever cases.

Brucellosis is also not uncommon and has to be borne in mind in cases with an undulant type of temperature in diagnosis of Typhoid. It is however a matter for gratification that Typhoid, Typhus and Brucellosis all respond satisfactorily to Chloramphenicol. Therefore, in active clinical practice with little or no facilities for these laboratory investigations a therapeutic trial of Chloromycetin will usually bring about good response.

RESPIRATORY

(b) *Chronic upper respiratory tract infection* must always be remembered as a possible source of low temperature, over a long period, in any individual; and steps must be taken to ascertain if such condition exists and if so, to have it dealt with either by medicines or appropriate surgery. I cannot sufficiently emphasise this point.

Among chronic lower respiratory infections T.B. is naturally the foremost but other viral infections as well as Mycotic infections should not be forgotten. I have already referred to their simulating Typhoid fever and how a plain X-Ray will reveal the diagnosis. The lungs and the pleura are easily examined for physical signs and therefore such examination of the chest should be done repeatedly in the course of long illness. Even, if it is not present at the commencement, it may manifest itself during the course of the illness as a complication, and even in this light it is worthwhile examining and watching the chest.

CIRCULATORY SYSTEM

(c) While Rheumatic fever acute and chronic and the recurring bouts fever of the Rheumatoid Arthritides are well known, the concept of sub acute bacterial Endocarditis is apparently inadequately recognised.

It is well known that Rheumatic fever, after sometime, gives rise to signs of valvular disease of the heart and that further attacks of Rheumatic fever may occur even thereafter, with the result that the picture of Rheumatic fever and established signs of valvular disease are commonly met with at the same time.

It is also known that Rheumatic fever responds primarily to appropriate large doses of Salicylates within a very short time. But, what is not so well recognised seems to be the fact that a person with a valvular disease is liable to superposed bacterial infections of his valves by Pyogenic or non-pyogenic organisms, either of which will give rise to bouts of fever with enlargement of the Spleen and various embolic phenomena. It should be a good thing really, to suspect such infection in cases which do not respond satisfactorily to Salicylates and take steps to establish a diagnosis beyond doubt, within the shortest possible time, so that proper treatment can be started without undue delay. Delay spells failure in most of these cases. I would like to add that while it is common knowledge that damaged or defective valves are usually the seat of the secondary infection, it is not quite so well known that sound or healthy valves may also be infected similarly. I had under me a patient, who had a long irregular fever about two months duration with only enlargement of the Spleen and no previous affection of the heart, clinically or radiologically and after three months turned out to be sub acute bacterial Endocarditis and it is a matter for gratification that in spite of the delay in the diagnosis, patient managed good recovery, was alright for four years; then had a relapse recently and is again now alright.

(D) RETICULO ENDOTHELIAL SYSTEM DISTURBANCES :

This system responds to various stimuli in the body including several in-

fections. Hyperplasia of some of the elements is also associated with fever. Hodgkins Disease is one example; and there are the various gradations of Reticulo Endotheliosis all of them showing varying degree of fever at sometime or other. Among the infections, Kalazar, T.B. and certain viral infections are noteworthy. The Spleen and or Liver are usually enlarged in addition to various glandular enlargement both under the skin and deep inside the body. Biopsy is the only method of diagnosis and there is no substitute for it so far.

(E) PARASITIC INFECTIONS:

Malaria and Kalazar have been mentioned. *Amoebiasis* is important; not merely its hepatic or pulmonary forms but also the plain intestinal forms which have also been recognised as the cause of continued long fever and wasting. A routine check up for Amoebic infection is essential and here again the finding of Amoeba or the cyst is the only proof of the infection.

(F) In the absence of any of the above causes irrespective of the age of the patient, the possibility of the fever being due to continuous tissue destruction as happens in various forms of malignant disease, including the leukemias has to be borne in mind; and investigated for. It is often difficult to exclude deep seated foci of malignancy but it is nevertheless worth the attempt from all sides. As here again early diagnosis means prospects of some possible treatment, delay spells disaster.

(G) MISCELLANEOUS GROUP :

This group includes last but by no means least, fevers associated with some

of the rarer Collagen diseases like Poly Arteritis Nodosa or generalised Lupus Erythematosus. The clinical pictures in these conditions may be varied according to the damage—Skeletal musculature blood vessels, generalised or local cardio-vascular system, respiratory system alimentary, Central nervous system or excretory systems. Diagnosis is usually obscure and likely to be missed unless one keeps in mind such possibilities. It is needless to say that the satisfactory response of some of these conditions to Cortisone or Cortisones like substances with the prospect of getting the condition under control over long periods, should behave us to be on the lookout.

Tropical Eosinophilia is a very common condition in South India, and it has been my experience that a good proportion of these cases present with a chronic low grade fever and wasting. A speedy examination and consequent diagnosis will doubtless bring relief to the patient and Doctor in this condition.

TREATMENT

I wish to touch only on few aspects of treatment as I feel they require some emphasis.

(1) It is clear that specific therapy if such is known for the condition, should be employed appropriately and in full measure from the earliest possible time, *after the diagnosis has been established*. I do not want to repeat what I have already said about the abuse and misuse of these drugs in an attempt to substitute for an absent diagnosis, or to satisfy the importunity and urgency of the relations or even to satisfy the wishful thinking of the Physician himself.

(2) *General supportive therapy* is well recognised by all Physicians and I shall not dilate upon these except to say that food must be sufficiently liberal in its Calorific value and sufficiently palatable and not insipid. The practice of giving liberal feeds to our Typhoid cases in the recent years has paid rich dividends.

(3) I want to refer to the aspect of blood and electrolyte imbalance which are liable to occur in the course of any long illness and more so in Febrile cases, attended with vomiting or diarrhoea or both at various periods. A watch must be kept on the fluid intake and output daily, as also on excessive or abnormal loss of fluids and electrolytes from the body by vomiting, diarrhoea or blood loss. The need for such a watch and replacement of lost material promptly has begun to be recognised in recent years and I shall also emphasise the same point.

CONCLUSION:

I have endeavoured to analyse the difficulties which beset the Physician in his management of long fevers from various angles.

I have also pointed out the need for careful examination of the patient at every visit and review and reappraisal of the position and progress of the patient from time to time.

I have also tried to classify the fevers from the point of view of the various localising features which may occur in these diseases as pointers for specific investigations for diagnosis.

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Very truly Yours,
DR. B. RAMA RAU, B.Sc., M.B.B.S.
Editor

Spontaneous Pneumothorax

By

DR. K. VASUDEVA RAO, M.D., F.R.C.P., F.D.D.
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Spontaneous Pneumothorax is one of the emergencies in general practice and therefore it is essential that the practitioners should have a fair knowledge of its causation and treatment.

Pneumothorax is the term used to indicate the presence of air in the pleural space. The presence of air in the pleural cavity may either be due to therapeutic indication of air by a physician, when it is termed artificial Pneumothorax. When the air in the pleural cavity is due to an accidental occurrence either pathological or due to injury, it is known as Spontaneous Pneumothorax.

To understand the mechanism of this complication, it is necessary to review the physiological mechanism operating in the respiratory movements. On either side of the chest, both the lungs are covered over by two layers of pleurae the parietal pleura being the one covering the inside of the chest cavity and the visceral pleura the one closely covering the lung substance. These two pleural surfaces are normally free without any adhesions thus allowing free movement for the lung contained in the chest cavity during respiration.

During the process of inspiration, the ribs are raised, the intercostal spaces widen, the domes of the diaphragm are lowered and there is a slight twisting of the mediastinum, all these movements

operate in increasing the volume of the chest cavity, which is fully occupied when the lungs expand. The negative pressure in the inter pleural space is something like -2 or -3 mm. measured by mercurial monometer, and since the rise of the mercurial monometer is so small, and will be difficult to record easily, it is usually read on a water monometer, and the negative pressure on this water monometer varies from -20 to -24. This will vary with the free pleural space available. When any inflammatory infection occurs, this free space is obliterated and the two layers of the pleurae become adherent. In such cases no complication like Spontaneous Pneumothorax can occur.

How to find out if there is a free pleural space available?

Since this knowledge plays such an important part, in tuberculosis practice, it is necessary to know if there is any method by means of which we could determine if there is a free pleural space. There are two indications which at best can be only of academic value:

(1) To do what is known as Tidal percussion

(2) Auscultation

Tidal Percussion: It is done thus: Make the patient stand in front of you with his back turned towards you, in good light. Ask the patient to take a

deep breath and hold his breath for a few seconds. During this time, the doctor should percuss the lower border of the lung in the position of extreme inspiration. Mark this place. Now ask the patient to exhale completely and not to breathe for a few seconds. During this interval, percuss the lower border of the lung during extreme expiration. Mark this spot. Now measure the width between the two markings, i.e. the range through which the lower border of the lung has travelled during extreme inspiration and extreme expiration. This width is normally 5 to 6 cm. It is known as tidal amplitude. If the lower border of the lung is unhampered by adhesions it will travel this distance; when adhesions are present the lung border is held down, and hence the range of expansion will necessarily be restricted, and therefore the width will be less than 5 or 6 cm.

Auscultation: This is less reliable than the last one. It is based on the fact if the lung expands well, the breath sounds are well heard.

Both these methods are not of much practical value though these occasionally help us. The surest way of finding whether free pleural space is available or not is by introducing a needle into the intrapleural space.

When either intentionally or by some abnormal natural process, air enters the free pleural space, the highly negative pressure that is normally present becomes less negative, and when the quantity of the air introduced increases, the pressure becomes positive. The pressure

may become highly positive as to produce respiratory distress and unless relieved immediately may prove fatal. As a result of this increased intrapleural pressure, the lung becomes collapsed, and to some extent the expansion of the organ is impeded. Since the Mediastinum is normally mobile, the increased intrapleural pressure has its effect on the neighbouring organs, and these become shifted to the opposite side.

After knowing the physiological mechanism of the lungs and their function, it will be easy to understand the complications like Spontaneous Pneumothorax.

What is Pneumothorax? It is a term that is usually used to denote the presence of air in the intrapleural space, it may be done as a therapeutic measure by a doctor when it is called artificial pneumothorax, or it may occur by some abnormal natural occurrence when it is called Spontaneous Pneumothorax.

Etiology: Spontaneous Pneumothorax can occur under the following conditions:

- (1) Non-Tuberculous conditions:—
 - a) Apparently healthy people
 - b) In non-tuberculous diseases of the lungs
 - c) Injury

- (2) Tuberculous conditions:—

Non-Tuberculous conditions in apparently healthy people:— This can occur when one of the subpleural alveoli burst as in cases of extreme exertion. I have seen it occur in medical students in the physiology class when they are measuring

the vital capacity of their lungs. It can also occur when an emphysematous bullae bursts especially when the bullae is situated in the subpleural space.

In Non-tuberculous diseases of the lungs: The most common diseases are: (1) Malignant growth, (ii) Lung abscess, (iii) Lung gangrene, (iv) Foreign body in the lung, (v) Whooping cough.

Diseases referable to neighbouring organs:— Liver abscess bursting into pleural cavity, (ii) Suppurating gland of the mediastinum bursting into the pleural cavity, (iii) Malignant disease of the bones around the chest, like Sarcoma of the ribs.

Injury: Injuries like fracture of the ribs when a broken end may pierce the pleurae, (ii) Injury inadvertently caused by a doctor while inducing artificial Pneumothorax. (Here the A. P. needle may pierce a subpleural bullae or a subpleural cavity or a spot of subpleural cornified portion of lung substance.)

Types of spontaneous Pneumothorax.

There are three distinct types of Spontaneous Pneumothorax recognised now clinically.

(1) *Closed variety:* Here the tear in the visceral pleura occurs in a fairly normal portion of lung tissue, as a result of this puncture, air from the alveoli escapes into the pleural space, and cause spontaneous pneumothorax. As a result of the accumulation of air into the pleural space, the normal negative pressure becomes less and less negative, and later positive depending on the quantity of air that has escaped into the pleural space. When the interpleural pressure

is raised, the lung becomes collapsed. As a result of this collapse the aperture that has been the cause of the leakage of air becomes occluded and consequently no more air enters the pleural space. Gradually the leak becomes sealed by secretions if the collapse is kept for some time. By that time the air that has escaped into the pleural space gets absorbed and then the lung and the patient is none the worse for it.

(II) *Open Type:* Here, the puncture in the lung substance occurs in a portion of lung tissue, which is hornified almost to the consistency of leather, due to chronic fibrosis, secondary to chronic pulmonary tuberculosis or some other inflammatory condition, the most common cause being pulmonary tuberculosis. When a needle is passed through a leather piece the hole made by the needle is patent even after the needle has been removed from the leather. This is due to the loss of resiliency which is normally present in any good leather, like rubber. In a similar way when the lung tissue undergoes chronic inflammatory changes, the elasticity of the lung is lost, because the elastic fibres are destroyed during the process of chronic inflammation. As a result of loss of elasticity, the puncture made in the lung tissue does not get closed even when the lung gets collapsed as a result of increased interpleural pressure. The condition is one where there is free communication between the pleural space and the air in the Bronchial space.

(iii) *Valvular Type:* Here the puncture produced is of a peculiar nature. The

tear acts as a valve—a valve, which allows the air to enter the pleural space during inspiration and does not allow air to escape during expirations. During expiration the valve closes and thus prevents any air from escaping. As a result of this arrangement, more and more air gets into the pleural space with each inspiration. Thus the pressure in the interpleural space becomes more and more raised making the symptoms become more and more urgent and if not relieved in time will end fatally.

How to find to which type a given case belongs: This is easy provided you have an A. P. apparatus. When faced with such a patient, introduce a needle into the pleural cavity on the pathological side, and watch the reading of the monometer, say it may be something like plus 10 to plus 15. Deflate or withdraw 300 to 400 c.c. of air and watch the pressure in the pleural space by means of a monometer, it may be say -6+4. Wait for 10 minutes with the needle inside and again take the monometric reading. If it is a closed variety, the reading of the monometer will practically be the same; if on the other hand the reading has become more positive than before, it means that in the 10 minutes of waiting more air has escaped into the pleural space and therefore the pleural pressure raised as a result of the increased quantity of air, hence the condition is one of valvular variety.

If on the other hand you find that even after deflating say 1000 c.c. of air, there is no change in the reading of the monometer, it means that there is a fistulous opening between the pleural

space and the Bronchi. In this case, even after removing large quantities of air, there is no change either in the reading of the monometer or in the clinical condition of the patient.

Prognosis of these three conditions— From the point of view of prognosis, the first type, namely the closed variety is the best and has the best prognosis. In this variety, the small puncture produced in the lung tissue is very soon sealed by the collapse that is produced, the air, in the pleural space is quickly absorbed and in a very large number of cases, the normal condition is restored in the course of 2 or 3 weeks. A large number of innocent variety of Spontaneous Pneumothorax are of this nature.

Next to the closed variety the open one where there is a fistulous opening between the pleurae and the Bronchi is to be preferred, from the point of view of immediate danger, to the life of the patient. Though it is preferred from this point of view, yet, ultimate prognosis is not very good, because of the fistula and the consequent danger of spread of infection from the bronchi into the pleural space, often leading to pyopneumothorax and discharge of pus through the mouth, leading to gradual exhaustion. Unless surgical procedures are undertaken soon to close the fistula, the patient becomes worse and soon dies of sepsis, and toximia.

The worst of the three from the point of view of immediate prognosis is the valvular variety. Here unless attempts are undertaken to relieve the tension in the pleural cavity, which every minute is

increasing, the patient collapses of respiratory failure. Even when the immediate danger is got over by prompt intervention, yet the ultimate danger to the patient is very great. 90% of cases of spontaneous pneumothorax of this variety, become pyopneumothorax in the course of a few days, sometimes within a few hours. The treatment of pyopneumothorax becomes difficult as the patient will usually be poor in general health and in a condition of toximia. Both the immediate as well as the ultimate prognosis in this type of spontaneous pneumothorax is poor.

Diagnosis of Spontaneous Pneumothorax: In the diagnosis of this condition, we have to have recourse to the old time honoured method of examination.

History: In all cases of Spontaneous Pneumothorax the history is very instructive. Either there is a history of having had or suffering from Pulmonary tuberculosis in a very large number of cases. The second item which helps us in the history is the fact, that the condition has come up very suddenly either immediately after a heavy cough, or after some exertion, or after induction of artificial Pneumothorax, especially if it is a case of bilateral induction of Pneumothorax. The third point that will help us, is the fact, that if cough was present, it is replaced by breathlessness and cough has practically stopped for the time being. Some patients will also be able to tell us that at the time this complication arose, the patients felt as though some thing had given way in the chest.

Inspection: In a very large number of cases, the patient is orthopaenic, and sitting in bed with all the accessory muscles of respiration brought into action, the patient looks distressed, there is cold perspiration, and signs of cyanosis may be present.

Careful observation will reveal the fact that one side of the chest does not move as freely as the other side; in children the intercostal spaces may be widened, not so in adults, the apex beat may be seen displaced, and the patient is craving for more air.

Palpation. The displacement of the apex beat and of the trachea can be confirmed, this displacement takes place only if there is a mobile mediastinum, otherwise there will be no displacement of the mediastinum. On the affected side, there will be restricted movement and the vocal fremitus is reduced or completely abolished in some cases.

Percussion: This has to be done in comparison with the other normal side. In cases of pulmonary tuberculosis I would recommend percussing from below upwards, as the bases often give the normal percussion note for each individual. In a case of air in pleural cavity, the percussion note is hyper-resonant and in some cases, especially in children it may sometimes be dull. In percussion, if there is any dull area, its margins should be definite as the pattern of dullness will vary in many cases and this recognition of the definite pattern will help very greatly in the diagnosis of the disease. For example, in the case of pleural effusion, the line of dullness is

in an oblique line, the so called Ellis line, the highest peak being reached in the axillary region.

Even in the case of adults the percussion note may be dull when the air in the pleural space is under very high pressure. In the case of Hydro-pneumothorax, when the patient is in the erect posture, there is a distinct straight line at the base where fluid is present and on the area above this fluid, there will be resonant note. This resonant note is different from the resonant note elicited over fluid in effusions. The note is boxy and not heper-resonant.

In cases of atelectasis of the lower lobe, the area of dullness is quite different. In cases of pleural effusion, the area of greatest dullness is towards the lateral aspect, that is towards the chest wall, whereas in cases of atelectasis the area of most dullness is towards the spine, and dullness over the side of the chest may not be so great.

In this connection, a study of the x-ray pictures of the three conditions will be very instructive. It is reproduced below.

During percussion confirm also that has been seen with regard to the displacement of the cardiac area of dullness. Also feel for the position of the trachea. This is best done with the patient sitting in front of you, and you put your index finger in the superior sternal angle, and feel for the tracheal rings with the tip of your index finger. If the tracheal rings are palpated straight at the tip of the finger, it means the trachea is in its central position. If

the feel is to the left of your finger, the trachea is shifted to the right of the patient. If the rings of the trachea are palpated to the right of your index finger it means the trachea is displaced to the left of the patient.

The position of the mediastinal organs is of great value in differential diagnosis. In a large number of cases, when the mediastinum is mobile, shifting of mediastinum to the opposite occurs in cases like effusion, air or any other condition which produces increased intrapleural pressure, like empyeme, haemothorax etc. Shifting to the same side as the lesion occurs in cases of massive collapse, atelectasis, fibrosis and in rare cases of abnormality, like dextrocardia etc. It should be remembered that in a few conditions without there being any increased intrapleural pressure, the mediastinum may be shifted to the same side or the opposite side as in cases of mediastinal growths, cold abscess etc.

Auscultation : This has its own lessons to teach. On auscultation, there are two things to which importance has to be attached, one; the change in the normal respiratory note and the other to any abnormal sounds that may be heard. In many cases of spontaneous pneumothorax, the normal breath sounds are very much diminished and in some cases these may be absent, in children the breath sounds may not be diminished, and they may sometimes stimulate Bronchial breathing. There are two other special signs that one has to look for in all cases of spontaneous pneumothorax,

one is the metallic tinkle and the other is the fluid splash.

Metallic tinkle : This can be elicited when the patient is breathing, normally especially when the air contained in the pleural space is under high pressure. During inspiration, there is a distinct metallic sound heard just like what one is accustomed when the class bell has rung for some time and then stopped, when some sensation is still felt in the ears of the hearers. This can be brought into demonstration by asking the patient to cough. It is another way of demonstrating the so called Bell Sound or coil sound. With the stethoscope on the back of the patient, ask your assistant to tap gently on the opposite side of the chest on a coin. The gentle tapping can be well heard as though it is almost next to your ear. The presence of this sign is only an indication of the presence of increased intrapleural pressure, and in some cases, also indicates the presence of free fluid in the pleural space.

Fluid splash : For this to be demonstrated, two conditions should be present:

- (1) Sufficient quantity of fluid in the pleural space. At least 200 c. c. of it,
- (2) Air in sufficient quantity in the pleural space.

This can be elicited by standing behind the patient putting your stethoscope on the dull area, and asking the patient to bend down and get up. During this change of posture the fluid contained in the pleural space also changes its position and this will produce the splash.

It is like the familiar sound heard when a half full kodam of water is being carried. The fluid will also change its position when the posture of the patient is changed. This shifting dullness is very characteristic of Hydro-pneumothorax. Boohs say this sign can also be elicited in cases of effusion in the pleural cavity, but so far I have not been able to demonstrate this sign,

By marking out the level of the area of dullness one can find out the level of the fluid contained in the pleural space. Dullness and fluid splash indicate the presence of free fluid and the quantities of free fluid contained therein. There is another method by means of which, both these factors can be ascertained. This method is called ausculto-percussion. To elicit this, make the patient sit in front of you, with his back towards you. Percuss out the area of dullness, put your stethoscope on the dull area and draw your index finger with some pressure from above downwards, that is from the area of air to the area of fluid. Mark the level at which you hear a distinct change in your stethoscope of the sound, once again, put your stethoscope on the resonant area and draw your index finger with the same amount of pressure from below upwards. Please note the level at which a changed sound is heard in your ear. Roughly both the levels would be the same, that is the level of the fluid in the pleural space in that case.

Certain clinicians claim that by the nature of the fluid splash heard, one can definitely say whether the fluid is serious

or purulent, in cases of serious fluid, the sound is clear, whereas in the case of purulent effusions the splash is dull. To a large extent, it is right, but a good deal of clinical experience is necessary before this distinction can be recognised by the general practitioner.

How to confirm the diagnosis: I. X-ray examination—if the x-ray facilities are available readily at hand. Otherwise it is not safe to delay the emergency treatment till an x-ray is taken from a distant place, which means loss of valuable time and exertion which may act badly on the patient.

II. The second method is easily done. Introduce a hypodermic needle attached to a small syringe. When in pleural cavity, one draws free air easily into the syringe, it means that there is air in the pleural space. If the steps of examination shown above are followed, there should be no difficulty in arriving at the correct diagnosis.

Differential Diagnosis: Has to be made from:

1. Acute conditions of the respiratory tract such as lobar pneumonia, chiefly central, infraction of the lung, status asthmaticus, cardiac asthma, ureamic dyspnoea, Pleural effusions, emphysema, cardiac failure, especially conditions which produce hydro-thorax. It must be remembered that the diagnosis of spontaneous pneumothorax does not include the final diagnosis. It is only a complication of certain other conditions and it is therefore necessary to ascertain the disease that has produced this complication.

In arriving at the diagnosis of the disease, the following factors will help. 1. History of onset, history of tuberculosis in the person, 2. Correct clinical examination and 3. X-ray, if available. For the underlying disease, examination of the whole body for evidence of diseases like tuberculosis, malignant growth, such as secondary deposits in various organs of the body, examination of the effusion for T. B. and for malignant cells or for other organisms, examination of blood for presence of blood diseases etc. Briefly the following points of differential diagnosis will help in arriving at the correct diagnosis.

Acute lung conditions: Lobar pneumonia—In this case, the onset is acute, like spontaneous pneumothorax, but there is always a history of exposure to cold or some other chill. There will be a history of previous good health in most cases. The appearance will give some useful information such as the dilatation of the alae nasae, rusty sputum, acutely ill condition. Examination will reveal that there is definite consolidation with Tubular breath sounds, with rales. The Tubular breath sounds are different from the bronchial breath sounds heard in cases of chronic consolidation like tuberculosis. In acute consolidations Bronchial breath sound is heard although it is next to your ear. Hence, termed tubular breathing, whereas in chronic consolidation the bronchial breath sound is heard as though from a distant place. Hence termed bronchial breath sounds. In the course of 7 or 9 days, crisis occurs and though the lung condition has not changed, yet the toximia disappears.

(To be continued)

“Injured Elbow”

By

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(Continued from May '58 Issue)

Fractures of the lateral condyle and capitular epiphysis takes the place of epiphysial separation of the lower end of humerus and is its equivalent. It occurs from the age of 5-15 years. During this period the capitular epiphysis is the only existing osseous centre with the exemption of the internal condyle which is more an apophysis than an epiphysis. The reasons why the fracture of the lateral condyle is rarely entirely epiphysal are that the capitular epiphysis is entirely intracapsular and that the ligaments of the elbow through which strain may be exerted and attached to the metaphysis when force is transmitted upwards through the radius to the capitulum, the elbow is always in incomplete extension. In this position, as a result of forward projection of the lower articular end of the humerus, the epiphysis is buttressed posteriorly by the metaphysis which must be fractured if the capitulum is displaced.

The upper age limit for fracture of lateral condyle in children is about 15 years, at which time the lateral condylar epiphysis fuses with that of trochlea, to be followed shortly afterwards by the union of the entire epiphysis with the shaft.

Diagnosis of fracture of lateral condyle: The patient is usually a boy aged 5-15 years. There is a recent history of injury and on examination, there is some swelling of the elbow joint and localised tenderness over the lateral condyle.

Supra-condylar fracture is eliminated by the absence of characteristic deformity. Fracture upper end of radius is excluded by the free range of pronation and supination.

Radiological Diagnosis:— X-ray must always be taken, as otherwise the fracture may go unnoticed and dismissed as a sprain. A. P. view is more helpful. But sometimes x-ray diagnosis may be difficult in young children, because a large portion of the distal end of the humerus is still cartilaginous. The oval osseous centre of the capitulum may be the only bone visualised in the condylar fragment. The fragment is larger than what it appears to be in x-ray. It is usually rotated on its horizontal as well as vertical axis, so that the articular cartilage of the capitulum comes to lie against the raw surface of the metaphysis.

Management:— If future complications are to be avoided, immediate and accurate reduction of the fracture must be accomplished.

When there is lateral but no rotatory displacement, complete reduction can usually be secured. The fragment should be pressed into its bed by lateral compression of the elbow between the surgeon's two hands. The elbow is then immobilised in flexion.

According to the general consensus opinion, operative reduction is almost invariable necessity and should be performed promptly when displacement is present. When operation is done within the first 2-3 days, replacement is accomplished easily. The fracture is exposed through a lateral incision. A forceps is applied to the muscles and ligaments attached to the lateral condyle and this is pulled upwards, while, at the same time, the fragment is pressed forward into normal position with the fingers.

Surgical opinion differs as to the necessity of internal fixation of the fragment. Stone and others have reported that when replacement was obtained they were able to hold the fragment in position by simply placing the elbow in the position of acute flexion. Other surgeons have employed nails or pins. The disadvantage of a pin is that it causes stiffness and disturbs the growth of the epiphysis. For these reasons, it is preferred to suture the fragment with silk. The suture is passed through ligamentous and muscular attachments. A drill hole may be made in the external supracondylar ridge directly above the fracture line. When the other end of the suture is passed through this hole and tied, the fragment is securely fixed

in position. Following closure of wound a posterior splint is applied with the elbow fixed in a position of moderate flexion.

The elbow is fixed in splint for about 4 weeks after which active movements are started. Function is regained quickly.

Operative replacement of the condylar fragment becomes increasingly difficult with the lapse of time. The muscles causing the displacement become contracted and fixed in their new position. Normal anatomy becomes obscured and after 2-3 weeks the matter of securing reduction, even by open operation is a real problem. It may be necessary to free some of the ligamentous and muscular attachment to the condylar fragment but this involves sacrificing blood supply and may vitiate the result. It may be still possible to freshen the fractured surfaces to insert a bone graft between the end of the shaft and the condylar fragment and fixation with a nail.

In late cases, if the fragment is united in reasonably good position, it is better to leave it. If it is not united the result can be improved by open reduction. This should always be preferred to excision of the fragment which does little or nothing to improve the range of movement or stability of the joint. The fractured surfaces are cleared and freshened and the fragment is fixed by catgut sutures through drill holes. If further fixation is necessary, a bone graft in the form of a peg may be driven through the fragment into the shaft of the humerus.

The patient may come years later for disabilities and deformities and resulting from untreated fractures. They are due to malunion or nonunion resulting from unsuccessful closed reduction. The range of motion gradually increases until in adult life it may equal that of normal joint. It is surprising to see joints, which in the x-rays look hopelessly distorted move painlessly through the normal range of motion. The patients are so satisfied with their elbows, that no treatment of bony deformity is sought or considered advisable.

The place of closed reduction in the treatment of fractures of lateral condyle:— Fracture separation of the lateral condyle is very unstable and according to the general consensus opinion, closed reduction has very little place in their management. Attached to the medial and lateral condyles respectively are the strong flexor and extensor group of forearm muscles. When either condyle loses its bony anchorage, the pull of these muscles displaces and rotates it. In such cases, it is impossible to replace the fragment in its proper position by and type of closed manipulation. Success depends on a clear view of the entire articular surface of the humerus and the fragment must be turned and manoeuvred about and fitted back into its position, like pieces of a jig-saw puzzle. Even when reduction is obtained, the fragment is insecure and displaced by putting the attached muscles under tension by slight movements of the forearm. The least pull displaces the fragment. Even minor displacements of the condyles are incompatible with

satisfactory function, malunion, nonunion, and growth disturbances of the epiphysis impairing the future use of the joint. Hence some type of dependable internal fixation, which will not allow the fragment to slip is to be obtained. Many types of internal fixation, including cat-gut, silk, steel-wire and screws are used for this purpose.

After treating 60 cases of fractures of the lateral condyle Speed (1951) has come to the following conclusions: "Cases where the detached condyle is only moderately displaced and not rotated, can be frequently reduced satisfactorily and a good result obtained. However, subsequent displacements are liable to occur, and if operation is decided on at the end of a week or two days, valuable time is lost. If there is wide displacement and rotation of the fragment, closed reduction is extremely difficult or impossible. Exceptions only prove the rule". P. D. Wilson agrees and opines that "it is so impossible to reduce this fracture by closed reduction that it is folly even to attempt it. The rare case that is successfully treated by this method is more the result of good fortune than good management."

Watson Jones is more optimistic and says "Even if there is displacement, manipulative reduction within a day or two of injury is by no means impossible and no obstacle to reduction is encountered in almost one third of the cases. The fracture is reduced, by an assistant holding the limb by the wrist with one hand, with other hand on the inner aspect of the elbow, and gently opening

the joint on the outer side so that there is slight cubitus varus. The surgeon then places both thumbs under the fragment and pushes it upwards, tilting it into the joint. The elbow is gradually flexed and the two condyles of the humerus are strongly compressed laterally so that the fragment is pressed firmly in its bed. The elbow is then immobilised in flexion with a light posterior plaster slab and a sling.

But the undisplaced fractures are so unstable in their position and the displaced fractures are so impossible of closed reduction, that the general trend of surgical opinion is in favour of universal adoption of open reduction and internal fixation, in all cases of lateral condylar fractures.

Complications of Lateral Condylar fractures:— If a supracondylar fracture is reasonably well reduced, union takes place with very little limitation of function in the joint or disturbance in the future growth of the epiphysis. Experience has shown that such is not the outlook for condylar fractures. Non-union of the detached fragment is almost universal with the ordinary closed reduction. This is followed by a sequence of complications increasing deformity and distortion of the elbow joint occurs due to the affected condyle to develop because of delayed or arrested growth of the epiphysis. The result is a valgus deformity and an unstable joint which becomes painful after use and in later years associated with delayed ulnar palsy. Limitation of motion is the rule in the early years following the fracture, although

some cases may develop full range of motion.

Thus in the untreated and mismanaged cases, the patient may come complaining of (1) stiffness of the elbow (2) increased cubitus valgus deformity (3) symptoms of delayed ulnar palsy (4) painful arthritis.

Stiffness of the elbow and painful arthritis:— Though there may be some stiffness of the joint in the early years, some cases may regain full-range of motion in course of time. When there is serious impairment of motion or when there is so much distortion or damage to the joint as a whole that it is reasonable to anticipate persistence of pain, arthroplasty or arthrodesis may be considered depending on the case. Painful arthritis also is treated on similar lines. Arthroplasties are contra-indicated in children.

Cubitus valgus deformity:— If the capitular epiphysis is not reduced it continues to grow as a free independent piece of bone on the outer aspect of the joint. However, the growth is not moulded by the effects of pressure, and thus remains imperfect. The trochlear epiphysis continues to grow inwards, but since a part of the anatomical trochlea is included in the capitular epiphysis, the deformed trochlear portion of the lower end of humerus cannot provide normal support to the upper end of the ulna. As a result the ulna is pushed inwards along with the trochlea and increasing cubitus valgus deformity results. The earlier in life the fracture occurs, the greater is the deformity.

As regards treatment, mere presence of deformity does not indicate a corrective operation. In any case, the corrective operations should be deferred till the child attains adolescence and growth of the limb is completed. The operation has a cosmetic effect only and does not in any way improve the function of the limb. As Watson Jones says "The disability is not sufficient to warrant operation, until delayed ulnar nerve palsy supervenes, and this can be relieved by anterior transposition of the nerve." The operation consists of supracondylar, wedge osteotomy, with the base of the wedge directed medially.

Tardy Ulnar Palsy:— Lesions of the peripheral nerves associated with fractures of the elbow are usually classified as primary, secondary and delayed according to their time of appearance. Tardy ulnar palsy belongs to the third category and as the name implies, occurs many years after the original injury.

Etiology:— In Platt's series of 552 fractures about the elbow joint, there were only 13 cases, 3% nerve injuries, 12 of the ulnar nerve and one of the median nerve.

The term "Tardy Ulnar nerve paralysis" was coined by Hunt in 1916. In the ten cases reported by Mouchet, each one was associated with fracture of the lateral condyle. Platt also reported 9 cases, each associated with old fracture of lateral condyle. Similar experience was shared by Miller.

The lateral condylar fracture is not the exciting factor per se, in the production of late ulnar nerve paralysis but it

is the cubitus valgus deformity which follows it. Although late involvement is not impossible with the other types of fracture about the elbow, it is the exception.

The clinical picture embraces 3 phases.

(1) Fracture in childhood.

(2) Latent period—rarely less than 10 years.

(3) Stage of ulnar neuritis.

In the first stage, there is fracture, with displacement and rotation of the fragment, displacement not corrected, fibrous union takes place but function may be good, increasing valgus deformity first due to the displaced fragment and second due to disturbed epiphyseal growth on the lateral side.

Latent period: Not less than 10 years in 75% of cases (Platt).

Neuritis stage:— This may be progressive subjective symptoms both motor and sensory pain may be present along the distribution of the ulnar nerve, exaggerated by movements at the elbow joint. This is followed by trophic disturbances, atrophy on the inner aspect of the forearm (flexor carpi-ulnaris and inner portion of Flexor Digitorum profundus), wasting of the hypothenar eminence and lumbrical and interossei. There is loss of epieritic sensation on the ulnar side of the forearm, wrist and hand while protopathic sensation is lost over an area which is always smaller than this.

Ultimately claw hand may result.

Pathogenesis:— Mouchet pointed out that "as a result of cubitus valgus defor-

mity, the nerve is compelled to take a longer course around the olecranon process over which it becomes stretched in the manner of a bow string. Adson describes the sequence of events as followed "with repeated slight traum, such as that due to bruising or stretching of the nerve over bony prominences, small haemorrhages in the perineurium and endoneurium result causing inflammatory reactions and the deposit of scar tissue. As the scar tends to contract, many of the fibres become strangulated and eventually destroyed, resulting in a gradual progressive atrophy of the nerve.

Microscopical studies carried out by Sherren, in two cases where the segment of the diseased nerve was excised, showed interstitial neuritis with areas of sclerosis in the perineurium and endoneurium.

Diagnosis :— Mouchet writes "A careful observer might be struck by 3 signs. Ulnar nerve palsy, cubitus valgus and deformity of the external condyle. This is characteristic enough to be recorded as on old fracture without the aid of x-ray.

Paralysis of the ulnar nerve must be differentiated from such lesions of the cord as anterior poliomyelitis, progressive muscular atrophy, syringomyelia, spinal cord tumors, amyotrophic lateral sclerosis and meningomyelitis, cervical rib and recurrent dislocation of ulnar nerve. Volkman's contracture may be differentiated by the absence of sensory changes limited to the distribution of ulnar nerve, the induration of mus-

cles vascular disturbances, and the absence of reaction of degeneration.

Treatment :— Operative treatment is indicated in all cases. Simple liberation of the nerve in its bed as performed by protherat is no good, Broca, Guilleman and Mally practised to gauge out a new groove by removing a wedge shaped piece of bone. This is not to be recommended because of danger of recurrent involvement of the ulnar nerve, in the fibro-osseous formation.

Another procedure is neurolysis. This consists in making longitudinal incisions in the outer connective tissue layers of the neuroma usually found on the nerve. This is done at regular intervals in the circumference of the mass by a sharp safety razor blade.

Thomas King advocated removal of medial epicondyle and the adjacent bone. Professor Sunderland thinks that this operation by removing the distal part of them medial supra-condylar ridge deals with the ridge intermuscular septum which might be one cause of continued symptoms after transplantation of nerve. However, the choice of operation lies between supra-condylar osteotomy as practised by Mouchet, and anterior transposition of the ulnar nerve in front of the medial condyles as first performed by Roux. The later is most commonly and successfully employed today. Murphy transplanted the nerve with subcutaneous fat, anterior to the medial condyle. However the nerve may be readily traumatised, since the skin and subcutaneous tissues offer inadequate protection. Adson in 1918,

transplanted the nerve into muscle bed, by incising and suturing them on the the nerve trunk.

If the ulnar nerve paralysis is incomplete, the above procedure may be adopted. If paralysis is complete, nerve resection and to end anastomosis done.

Results :— Out of 100 cases operated at the Mayo Clinic over a course of 15 years, 70% had beneficial effects due to the operation. Recovery depends on the factors; (1) The reversibility of the changes that have taken place at the site of irritation (2) The reversibility of the changes present in the motor and sensory end-organs and muscles. In muscles that have been denervated for more than 18 months, it is known that secondary changes occur which consist of fibrous replacement of contractile tissue. The consequence is that even in the presence of axonal regeneration, recovery of function may not take place. So it is clear that early transposition of the nerve is desirable. The nerve should be buried beneath the whole mass of the flexor muscles and the medial supra-condylar septum must always be excised, for the nerve may be caught in its sharp edge.

Conclusion :— 1. Closed reduction of lateral condylar fracture are at best uncertain and frequently impossible when there is displacement.

2. Accurate reduction and maintenance of close apposition of fractured surfaces are necessary to prevent non-union or malunion, with subsequent epiphyseal disturbance resulting in deformity and impairment of function.

3. Delayed open reductions restore position of fragments but are almost uniformly followed by stiffness and impairment of function.

4. Immediate open reduction, using some type of dependable internal fixation is the treatment of choice and is followed by the highest percentage of satisfactory results.

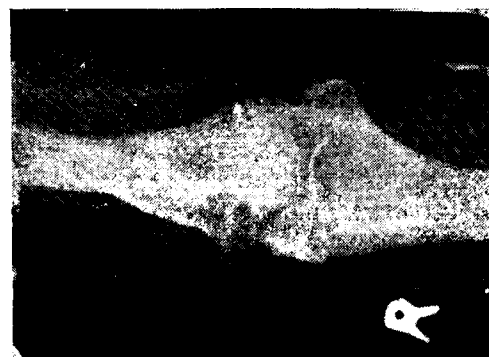
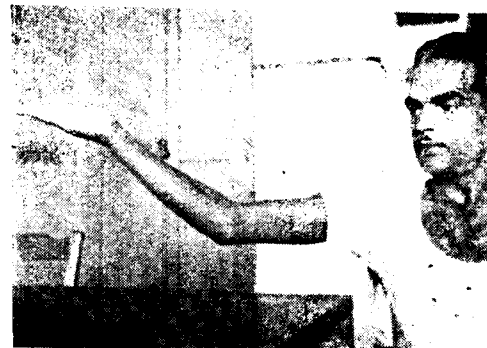
THE FRACTURES OF THE MEDIAL CONDYLE

The medial epicondyle is a rounder prominent projection of the distal humerus lying outside the joint capsule, it has a separate epiphysis which appears at the 5th year and fuses at the 18th. It serves as a common origin of flexor group of forearm muscles and gives attachment to the medial ligament of the elbow joint. The ulnar nerve lies in a shallow groove on the posterior surface of the epicondyle. Distal to the epicondyle, the nerve enters the flexor muscles, a short distance below the origin from the epicondyle.

Fracture separation of the epiphysis of medial epicondyle constitute 2% of all elbow injuries.

Mechanism of fracture : Fracture separation of this epiphysis occurs between 5-18 years i.e. from the time of appearance of the epiphysis till the time of its fusion. This condition may occur in either of two ways.

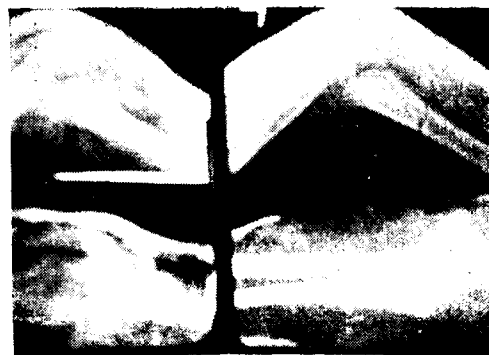
1. As a result of fall on the hand, the forearm is abducted on the humerus and the strain on the medial collateral ligament avulses the epicondyle. The epicondyle is pulled down to the level of the elbow joint into which it is sucked



Balakrishna A. P. and lateral views of the elbow showing fracture and forward displacement of capitulum.



Range of movements at elbow nearly 4 months after excision of the capitulum.



'X' Ray of elbow after open reduction of the lateral Condyle, showing Posterior dislocation of the elbow. The dislocation was later reduced by manipulation under anaesthesia



Eswaramma A. P. and lateral views of the elbow showing fracture of the head of radius.



'X' Ray of the elbow of the same patient after excision of the head radius.



Eswaramma 'X' Ray of the elbow 7 months after the fracture. There is radio-ulnar synostosis with Complete loss of pronation and supination.



Kumar—A. P. and lateral views of the elbow showing fracture of the lateral condyle with tilting of the fragment.



Ranganadhamma—Fracture Capitulum. Range of movements of elbow nearly 3 months after excision of the capitulum.

by the monetary vacuum which forms in the joint.

2. A postero-lateral dislocation of the elbow is associated with fracture of the medial epicondyle. The epicondyle being still attached to the medial ligament of the elbow is displaced along with the radius and ulna. When the dislocation is reduced the epicondylar fragment lags behind. Thus only a pseudo reduction is accomplished, in which the epicondyle remains between the coronoid process and the humerus and a subluxation remains. The epicondyle lies in the joint with its raw bony surface in contact with the articular cartilage of the coronoid. This type of incarceration following reduction of a dislocation is the more important for it is in such cases that the diagnosis is missed.

Types of displacement: There are four degrees of displacement of the medial epicondyle.

1. The least serious is slight separation of the epiphysis with minimal displacement. (2) If the strain is more forcible, the fragment is pulled down to the joint level and there is traumatic synovitis of the joint. (3) If the valgus strain is still stronger, the fragment is avulsed, the joint is momentarily opened on the inner side and as the humerus and ulna snap together again, the epiphysis is included within the joint on the inner side. (4) If valgus strain continues, the fourth degree of displacement arises, avulsion of the epicondyle being associated with complete outward dislocation of the elbow. During mani-

pulation reduction of the dislocation, the epiphysis may be included within the joint.

Diagnosis: Clinical diagnosis is seldom difficult despite the marked swelling and edema. The absence of the normal prominence of the medial epicondyle and presence of localised tenderness should be noted. If there is also a complaint of numbness and tingling in the area of ulnar nerve distribution, diagnosis is almost certain. However, immediate ulnar nerve signs are usually not present unless the nerve has been subjected to excessive trauma during reduction or at the time of injury. If they are present, they will not be noticed by the patient unless attention is directed towards them by the examiner. After the acute reaction and pain at the elbow have subsided, the patient may become aware of areas of anaesthesia and muscle weakness.

X-Ray:— Every case must be subjected to x-ray and at least two views taken. Every patient between the ages of 7 and 17 should have a separate centre of ossification in the position of medial epicondyle. If there is no ossicle in that position it should be searched for on the inner side of the trochlea or between the trochlea and ulna. The fragment may be turned to one side or may lie upside down. Patrick pointed out that if the epicondyle fragment can be seen at all in a lateral x-ray, it must be in the joint.

Treatment:— It is unnecessary to operate on the first two degrees of displacement of the medial epicondyle.

The bone is pulled from its bed and the fracture-hematoma may be obliterated by adjacent soft tissues so that fibrous union develops. The common flexor muscles gain a new attachment to the humerus through scar tissue which surrounds the bone fragment and encloses it like a sesamoid. The elbow is as strong as before. The most important part of the treatment of these cases is in the treatment of the associated traumatic synovitis. The joint should be immobilised in a posterior plaster slab in right angled flexion for about 10 days and thereafter active movements commenced. It may often be months before full extension movement is regained and it may be limited permanently if massage and forced manipulation are employed.

Treatment of displacement of the medial condyle into the elbow joint:— The displaced condyle must be removed from the inner side of the joint or there will be serious and permanent limitation of movement, and kinking of the ulnar nerve may interfere with recovery from the paralysis. In recent injuries the fragment should be replaced as near to its normal position as possible by operative or manipulative reduction.

In recent cases it may be possible to extract the epiphysis from the joint by manipulation. Its mechanism depends on the fact that the medial epicondyle gives to the flexor muscles of the forearm by a conjoint tendon. By their action, these muscles pronate the forearm, flex the wrist and fingers and also aid in flexing the elbow. It is evident, therefore that if these movements are reversed, marked

tension will be applied through these muscles to the point of origin of the epicondyle. With the epicondyle lying free within the joint such tension upon it should dislodge it from the joint. The forearm is therefore supinated and the elbow, wrist and fingers are extended. At the same time, the forearm is gently adducted, in order to increase the gap between the trochlea and ulna, thus allowing the epicondyle a free route of exit from the joint. No force is required to effect the reduction.

Alternatively the displacement can be reduced by adduction of the forearm on the humerus, associated with flexion and extension movements of the elbow with the object of expressing the epicondyle from the joint.

Clake (1939) referred to several cases in which spontaneous extension occurred.

Open Reduction: In late cases and when manipulation has failed to replace the fragment, operative reduction is indicated.

A short incision, about 3" long is made on the inner side of the joint. As soon as the deep fascia is divided, it is seen that the inner aspect of the humerus below the raw bed of the epicondyle is uncovered and that the muscles and fascia which normally cover it are turned into the inner side of the joint. The epicondyle, with the attached origin of flexor muscles is then hooked out. The bone is stitched to its normal position by means of one or two catgut sutures through adjacent soft tissues. Nailing is not necessary and better avoided. If

necessary the fragment may be excised and the tendon of origin of flexor muscles sutured to the humerus through a drill hole. As this epiphysis contributes little the growth of the lower end of humerus, growth disturbance because of excision is of no clinical importance. In all cases it is better to transplant ulnar nerve anteriorly as otherwise late ulnar neuritis due to the inevitable thickening and irregularity of the postcondylar groove might result. After operation, the elbow is immobilised in flexion, with pronation of the forearm. The plaster cast is removed after 4 weeks and active movements started.

Late Ulnar Neuritis — This is never encountered following simple fracture. When the medial condyle remains permanently displaced in the joint, this complication may occur necessitating anterior transposition of the nerve.

ANALYSIS OF FRACTURES OF HEAD OF RADIUS

There were 19 cases of fracture head of the radius, out of a total of 130 fractures around the elbow giving a percentage of 14.6. In Blunt's series, they form 7.5% of all elbow fractures.

The age distribution ranged from 10 to 50 years.

1-10 years.	...	Nil
11-20 years.	...	7
21-30 years.	...	7
31-40 years.		2
41-50 years.		3

There were 16 males and 3 females (6:1). The average duration of the fracture before coming to hospital varied from 1-8 days.

In all the cases, the injury was sustained by a fall on the outstretched hand.

The most common displacement of the fractured head is downward and laterally.

Downward and lateral.	...	7
Anteromedial.		3
Downward and medial	...	1
Anterior	...	1
Medial	...	2
Lateral.	...	1
Associated with Monteggia fracture dislocation	...	1
Nil or negligible displacement	...	3

Complications were few. There was one case of myositis ossificans, which was due to treatment with massage by a bone setter. There was one case of osteo-arthritis of the elbow joint following an old fracture of the head of the radius.

The cases showing no displacement of the fractured head were treated conservatively by immobilisation in plaster. The rest of the cases showing displacement were treated by excision of the head.

Twelve cases could not be traced. Six cases showed good range of movement at the elbow. One case had myositis ossificans following massage of the limb outside after excision of the head. In only one case, the joint was found to be stiff and movements not recovered properly, due to articular and soft tissue damage.

FRACTURES OF THE HEAD OF THE RADIUS

Anatomical Considerations:— Heads of the radius grossly resembles the

structure of the patella, consisting of columnar type of dense cancellous bone running in a more or less longitudinal pattern. Hence fracture of the Head tend to be oblique or longitudinal. The Head and its articular circumference are intra-articular, and enters into two distinct joints. (1) Elbow joint proper, which permits flexion and extension of the forearm on the arm (2) Superior radio-ulnar joint which permits rotation of the forearm.

In the adult elbow, the head of the radius is relatively unimportant, as the stability of the articulation is dependent on the humero-ulnar joint. It does contribute to the lateral stability of the joint, especially when the elbow is extended but quite a stable elbow remains after the head of the radius is removed, and its removal in no way interferes with the movements of flexion and extension.

The head of the radius does aid in transmitting force upward through the forearm to the humerus, and after it is removed this function is taken on by the interosseous membrane and little disability in this respect follows.

The capitulum and the radial head are reciprocally curved. But actual contact between the surfaces is only present when the elbow is flexed to 130 and the radius is in midprone position.

The supination and pronation movements at the proximal radio-ulnar joint as judged by rotation of the elbow are each in the nature of an arc of 160. This corresponds with 320 of the articular circumference of the radial head.

That portion of the head of the radius which forms the last 40 (1/9) of the articular circumference on its lateral border does not articulate with the radial notch of the ulna. This means that if more than 1/9 of the lateral segment of the radial head is involved in fracture, the range of rotation at the elbow is limited.

Incidence: Fracture of the head of the radius constituted 17% of all elbow injuries in Jones series, 44% in Murphy's series and 30% in Mark Mason's series.

Mechanism of the Injury: Cutter (1926) stated that direct trauma was responsible. Fleming (1932) found 75% of cases to be due to direct injury. It was further thought that cracks in the bone and separation of marginal fragments were minor injuries caused by some type of direct violence. But when it was difficult to explain why there should be so many cases of severe limitation of movement and prolonged incapacity, if the injury is such a trivial one. It is now generally accepted that these injuries are neither minor nor caused by glancing blows, but due to fall on the outstretched hand, which forces the joint into valgus position, impact on the radius against the capitulum and comminute the radial head to a more severe degree than is usually in x-rays. The articular cartilage of the capitulum is usually contused, and fragments of bone may even be broken off as loose bodies. Valgus strain may further result in tearing of the medial collateral ligament or avulsion of the medial epicondyle. Thus

fracture of the head of the radius is never a localised injury. It is an injury of the radius with injury of the capitular surface of the humerus and possibly all the structures on the medial side of the joint.

Clinical features: There is tenderness over the head of the radius and crepitus may be felt pronation and supination may be restricted.

X-Ray examination confirms the diagnosis. The fracture may be more severe than what is actually seen in the X-Ray.

Classification of fractures of head of radius :—

1. Marginal sector fractures without displacement.
2. Marginal fractures with displacement.
3. Comminuted fractures involving the whole head of the radius.

Treatment : Jones (1935) stated that "fracture head of the radius is a serious injury and while prognosis is good for recovery of a useful elbow, rarely is it a normal elbow".

The aim of treatment here, as elsewhere, should be to restore normal function whenever possible and as possible. The important movement that must be restored in the treatment of fracture head of the radius—is rotation as an elbow joint with full rotation range of movement, but with limitation of flexion and extension is a much more useful member than one in which rotation is limited and flexion and extension range is full.

The last 49 (1/9) of the articular circumference of the radial head plays no part in the rotation movements of proximal radio-ulnar joint. Loss of 30 range of rotation does not adversely affect function. This means, in effect, that providing the fracture of the lateral articular circumference of the head involves no more than an arc of 70 the remaining 290 being in tact, the rotation function will be preserved. From the practical standpoint, if more than 1/4 of the articular circumference of the head of the radius is involved in the fracture, limitation of rotation sufficient to impair function will inevitably result.

(To be continued)

Better Nourishment and Longer Life

SCIENCE ATTACKS "HIDDEN" STARVATION AMONG THE ELDERLY

A healthy baby is probably one of the world's most perfect machines. Not even the most brilliant scientists and engineers could devise a mechanism so ideally suited for the process of converting food into body tissue and energy.

Even after infancy, much of the perfection of this machine endures. On through youth and much later, most people continue to assimilate and utilize their food with great efficiency.

Sooner or later, however, for a majority this process tends to slow down and to work less well. Then, somewhere about age 60, sometimes earlier, they find the body's 'gears' meshing less tightly than formerly. They tire more easily. They don't sleep quite as well. And frequent exceptions only prove the rule.

Larger and larger numbers of people in every country are personally concerned with this problem and for a very hopeful reason—thanks to modern medicine, the life span of the average man has been increasing steadily for the last 50 years. In the United States, for instance, where only 3 in 100 persons were as old as 65 or more a century ago, to-day 8 in 100 are that old. And the same trend means that in 1975 there will be 12.

Partly for this reason and partly because of the tremendous strides made

in the recent years in the science of nutrition, the whole subject of what nutrition does and can do to hasten or retard ageing is becoming a matter of major medical preoccupation. Along with other problems relating especially to the elderly, like heart disease and arthritis, it is moving to the center of the medical stage as the older element in the population grows steadily larger.

What is involved comes down, in a sense, to one question—What kinds of dietary deficiencies contribute to ageing and how can they be made up? Outright starvation from sheer lack of food is a matter of universal human knowledge. But what no one knew until science revealed it in recent years is that a man can eat heartily and still "starve" in a very real sense, if his diet is lacking in one or more essential elements.

With lowered resistance in general, the aged and elderly are more susceptible to this hazard than others. What, then, can be done to safeguard them? Medical science is beginning to answer this question—the basic recourse being to augment, not the overall food intake necessarily, but the consumption of elements which are lacking for some reason.

This may be done in two ways. One is by altering the diet itself, often a

difficult thing to accomplish. The other is by supplying extra vitamins minerals and other elements in their pure form.

The hidden kind of "starvation" may take place in various ways among older people. As they become sedentary, their appetites decrease, for one thing. This is just as well, with the corresponding decrease of physical activity. But there is always the danger that the more meagre diet may excessively reduce the available quantity of nutritional essentials. Over enthusiastic dieting to lose weight may have the same effect.

In addition, the basic diet itself may lack the vitamins and minerals which are just as essential to health as protein foods, such as meat and fish, or starchy foods, such as bread and rice. Or, as often happens, the sufferer may have lost or never have had the normal capacity to assimilate certain elements in the diet properly. Or the food itself may come from inferior, run-down soil or be prepared in ways which destroy some of its values.

The precise mechanisms involved in these and other, subtler nutritional difficulties will remain the object of research for decades. But recourse to dietary supplements as the basic solution to the problem of deficiencies is already scientifically well established.

Virtually all the major vitamins, minerals and other essential factors are known and identified. They have been discovered as a result of unceasing and pains-taking research in universities,

medical schools, hospitals and pharmaceutical and industrial companies all over the world.

Not only are they available in pure form to build up failing diets, but special supplements for the use of older people are also prepared in variety to solve different particular problems.

Examples of what is being done in this field are the geriatric dietary supplements of Lederle Laboratories Division, American Cyanamid Company.

They have been reported by physicians in many countries to be effective in making up dietary gaps and in assuring adequate nutritional in-take for older people.

One contains more than 25 different vitamins and minerals. It is known as Gevral. In Gevral Protein, the same factors are combined with tissue-building amino acids, the basic constituents of protein. Gevrine provides a slightly different vitamin-mineral ration augmented by male and female hormones, for their beneficial effect on the basic processes of protein and bone metabolism in the elderly.

With proper supplementation of this kind, medical science makes adequate nutrition for health and vigor in the later years much easier and more certain than it could otherwise be or has ever been in the past. It is expected both to help swell still further the growing ranks of the elderly and to give them better health to enjoy in the added years which science is winning for them.

GLEANINGS FROM THE MEDICAL PRESS

ENTERIC FEVER IN CHILDREN. Taneja, P. N. and Ghai, O.P.: *Ind. J. Ped.*, August 1957, P. 237. via *I.J.M.S.* L. K. Banerji.

The authors present 205 cases of enteric fever admitted to the Department of Pediatrics, Irwin Hospital, New Delhi, between January 1953 and May 1955. Although the introduction of chloramphenicol has radically altered treatment and brought down the temperature in 15.3 days on an average, including the cases which did not respond to treatment at all, they caution that cases completely resistant to chloramphenicol would be increasingly encountered.

In the last phases of this study, cortisone or ACTH was given to some cases of enteric fever with peripheral circulatory failure with encouraging results. There was prompt reduction in temperature and recession of toxemia.

The authors make a recommendation that corticosteroids should be used in all cases with peripheral circulatory failure or those in whom resistance to treatment with chloramphenicol alone is suspected. The favourable effects of cortisone therapy were also observed by Gaubert et al. (*Bull. Memoir. Soc. Hosp. Paris*, 71: 431, 1955—*Abstracts of World Medicine*, 18: 451.—)

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PREDNISOLONE IN THE TREATMENT OF PULMONARY TUBERCULOSIS: A CONTROLLED TRIAL. A Preliminary Report by the Research Committee of the Tuberculosis Society of Scotland.—L. K. Banerji. *B.M.J.* 2: 1131-1134, 1957 via *I.J.M.S.*—L. K. Banerji.)

The present investigation began in February 1956. This preliminary report comprises of 110 cases who had completed six months treatment by the end of April 1957, but it was found necessary to withdraw 20 from analysis for various reasons.

The criteria for selecting cases for admission to the trial were: (1) The patient should co-operate and remain in hospital for six months. (2) No surgical treatment or collapse therapy should be undertaken for six months from the beginning of treatment. (3) Patients who had previous chemotherapy or collapse therapy, or if they had tubercle bacilli resistant to streptomycin, PAS or isoniazid, or if they were less than 15 years of age, or if active extrapulmonary disease was present, or if they suffered from any conditions like peptic ulcer, hypertension, cardiac failure were discarded from this trial.

Patients with acute, chronic, and chronic disease with acute spread were allocated to one of two treatment groups. In each group, patients were required to remain in bed for three months and to remain in hospital for six months.

Control Group (Chemotherapy only).—All patients aged 40 or under received streptomycin sulphate (or Dimycin.)—equal parts of streptomycin and dihydro-streptomycin 1 G. daily and isoniazid 100 mg. twice daily. Patients over 40 years received streptomycin sulphate (or Dimycin) 1 G. thrice weekly, PAS 5 G. twice daily, and isoniazid 100 mg. twice daily.

Prednisolone Group (Chemotherapy plus Prednisolone).—Patients received chemotherapy as in control group plus prednisolone 5 mg. four times daily for three months, plus ACTH gel 30 units I.M. on two successive days every fortnight, and potassium citrate 2 G. twice daily during prednisolone therapy.

The two treatment groups were comparable in age and sex, type of disease, extent

of disease, presence of cavities and presence of tubercle bacilli at the beginning of treatment.

Results.—The clinical condition of patients in the prednisolone group improved more rapidly than those in the control group in respect of subsidence of fever, improvement in appetite and weight gain. The proportion of cases showing moderate or considerable radiological improvement was greater in the prednisolone group than in the control group and this trend continued throughout the six months. There were 50 cavities in each group. The cavity closure rate at six months in persons treated with chemotherapy alone was 72% and in those treated with prednisolone 85%. The rate of sputum conversion was higher in the prednisolone group throughout, though at the end of six months there was 100% sputum conversion in both groups.

Toxic Effects.—84% of patients in the control group and 89% of those in the prednisolone group showed no toxic effects from chemotherapy. In only two cases it was considered necessary to stop prednisolone because of development of hypertension. Mooning of the face was observed in 46%. No significant disturbance of serum electrolytes was observed. Of interest was the occurrence of skin rashes in 25% of patients within two weeks of withdrawal of prednisolone. It may be that prednisolone may have interfered with the natural process of drug desensitization and that those rashes represented a mild drug-hypersensitivity evident shortly after the withdrawal of prednisolone.

Conclusion.—The preliminary results of this investigation suggest that provided adequate chemotherapy is given, patients with active pulmonary tuberculosis can safely be treated with corticosteroids. The desire for a rapid abatement of symptoms in severely ill patients may indeed warrant the use of corticosteroid therapy because this causes significantly more rapid improve-

ment radiologically and slightly more rapid cavity closure and sputum conversion. These advantages are of practical importance. No patients receiving prednisolone showed any significant evidence of deterioration.



ETIOLOGICAL APPROACH TO HABITUAL ABORTION, *Am. J. Obst. Gynec.* 73: 1022, 1957 via I.J.M.S.—W. Fernandes

Eastmant's definition of habitual abortion is a sequential loss of pregnancy in which at least 3 consecutive abortions have occurred. These women are grouped under the "pseudo-sterility" as they are not sterile in their power to conceive, but are not able to carry the ovum to viability.

Defect in the ovum accounts for abortion in from 48.9% to 72.2% in various clinics, but it is suggested by Furuhielm that the pathological changes in the ovum may be primary or secondary to faulty implantation, or to poor nutrition.

Grant showed that 53% of husbands of women who aborted had a high incidence of abnormal sperms, but it has not yet been proved that there is any relationship between abnormal spermatozoa and habitual abortion.

Other factors such as general metabolic disturbances, nutritional and toxic conditions, Rh factor, blood grouping, severe vitamin deficiencies (B, C, E, and K) have been cited as causes of abortion, while the effects of malnutrition and starvation are receiving special attention, at present, in the etiology of this condition.

In the fertility service of Washington University the aborters are divided into two groups: (a) Primary aborter who has never carried to term. (b) Secondary aborter who has had one or two term pregnancies and then lost in sequence 3 or more pregnancies.

In 29 multiple aborters studied, 19 belonged to the first group and 10 to the

second. In 17 women a definite diagnosis of endometrial fibrosis was established. In 5 didelphic uterus was demonstrated (3 of whom had associated fibrosis), and in 7 the etiology was unknown.

Diagnosis of endometrial fibrosis was established from definite past history of postpartum or post abortal infection followed by scanty and short periods, and also by curettage.

Treatment is therapeutic curettage in all cases of moderate or advanced endometrial fibrosis. In 17 cases thus treated, 10 showed regeneration of the endometrium with significant reduction in the degree of fibrosis. All patients are protected by progesterone whether or not the endometrium responds to curettage. In patients ovulating (demonstrated by vaginal smears and temperature charts), progesterone linguets 10-25 mg. daily are used, starting 48 hours after ovulation and conception are presumed to have occurred. If pregnancy is confirmed, then parenteral progesterone therapy 125 mg. per day (intramuscular hydroxyprogesterone caproate therapy) is maintained till the 4th missed period. Thereafter the dose is reduced to biweekly injections of 125 mg. H.P.C. till the end of the 8th month. If pain or bleeding occurs the patient is hospitalized and the dose of HPC doubled.

In cases of didelphic uterus, 125-250 mg. H.P.C. are given daily from the 35th day of pregnancy till the end of the 8th month. The object of such large dosage is to counteract the tendency to abortion or premature labour in women who have underdeveloped uteri.

Of the 17 habitual aborters in the endometrial fibroid group, 10 responded therapeutic curettage and 9 had at least one term pregnancy with H.P.C. therapy. Of the 7 patients who did not respond to therapeutic curettage, two also carried at least one pregnancy to viability. Thus there were 6 failures among these 17 patients.

Of 5 patients with didelphic uteri, 3 cases carried conceptions to viability (35-37th week under the HPC treatment described. Thus 14 of the 22 patients in whom the diagnosis was established had successful treatment.

In the group of 7 patients with unknown etiology, only one patient had a near term pregnancy with heavy HPC therapy, and the authors suggest that in this group there may be primary anomalies of the ovum.



ABO INCOMPATIBILITY IN THE ETIOLOGY OF HEMOLYTIC DISEASE OF THE NEWBORN, *Copeland, W. E., Vorys, N., and Ullery, J.C. Am. J. Obst. Gynec.* 73: 1045, 1957 via I.J.M.S.—W. Fernandes.

Since 1941 it has been evident that erythroblastosis may result from isoimmunization by antigens other than Rh. Anti-A and Anti-B agglutinins may occasionally cause a destruction of foetal erythrocytes of Group A or Group B respectively. If the mother is Group O, Rh positive, and the fetus Group A, the antigen of the fetus inherited from the father can enter the mother's circulation through the placenta. The A antigen of the fetus would induce in the mother an increase in the titer of anti-A agglutinin. The transfer of this anti-A agglutinin across the placental barrier will cause destruction of the foetal red blood cells.

A compatible mating is one in which both parents belong to the same group or one in which the mother's blood containing the dominant factor A or B (65%). An incompatible mating is one in which the dominant factor A or B is in the father (35%). In heterospecific pregnancy the fetal blood group is different from the mother—the child has a blood group antigen of the ABO system which is absent in the maternal blood cells, so that in such cases the mother's serum contains an isoagglu-

tinin which can react with the fetal cells. In a homospecific pregnancy the blood groups of the mother and fetus are the same.

From 1st June 1953 to 1st Jan. 1956 there were 26 cases of ABO incompatibility in the Ohio State University Hospital and Children's Hospital, and 55 cases of Rh incompatibility. The maternal type was predominantly O, Rh positive, and the fetal blood type was A, Rh positive in 69% of cases and B, Rh positive in 31% of cases. Diagnosis was further established by maternal anti-A and anti-B titers and Coombs testing. The Coombs test in ABO incompatibility was found to be weakly positive or negative. There was no correlation between elevated maternal titers of anti A and B a strongly positive infant Coombs test. Also infants of mothers with high maternal titers did not necessarily have high serum bilirubin levels, so that the height of the maternal titers and the degree of positive Coombs test were not of prognostic significance. Infants who developed high bilirubin levels within 6-24 hours after delivery required exchange transfusion. Onset of jaundice was early, appearing soon after birth (in 25 of 26 cases in less than 24 hours), and increasing in intensity. Varying degrees of anaemia, reticulocytosis and normoblastemia may be present.

Of 26 infants, 20 were transferred to the Children's Hospital for treatment. Of the 6 not transferred the bilirubin was below 20 mg. % and jaundice subsided. Of the 20 infants transferred, 8 had no active treatment, 2 had simple transfusions with O Rh negative blood, 7 received one exchange transfusion and 3 had two exchange transfusions. No kernicterus occurred in this group. One infant died of aspiration pneumonia and 19 infants survived. Indications for exchange transfusion are bilirubin over 20mg. %, increase of serum bilirubin of 0.5 to 1.0 mg. per hour, or reticulocytosis over 20%. Early recognition is

important and is difficult especially in premature infants in whom kernicterus is more likely.



TRANSMISSION OF COLDS:—J. Lab. & Clin Med., 50: 516, 1957 via Antiseptic)

In a study of the effects of Certain host factors upon susceptibility to colds, Dowling and his colleagues instilled infectious Secretions taken from patients with common colds into the nares of human volunteers. The following interesting results were obtained.

Among 143 allergic subjects, 45% developed colds. Among 693 non-allergic subjects challenged in the same manner, 31% developed colds. These differences were statistically significant.

Tobacco smoking and prior removal of tonsils bore no relationship to the frequency of development of the experimental common cold.

Ten of the 13 female volunteers who were chilled and then given an infectious secretion during the middle third of the menstrual cycle developed colds (77%). This incidence was significantly higher than that in subjects similarly treated during the first or last third of the menstrual cycle, or in those challenged during the middle third without being chilled.

These studies may throw additional light on why some persons have more colds than others. Women are known to acquire colds more frequently than men. The influences of endocrine secretions on the nasal mucosa and on resistance to infections are controversial.



CARBUTAMIDE AND TOLBUTAMIDE IN THE TREATMENT OF DIABETES The Medical Journal of Australia, December 14, 1957. via I.M.J.)

It is often to be regretted that the use of new drugs for the treatment of specific diseases is discussed in the public Press whilst is still very much in the experimental

stage. A recent example is the use of tolbutamide in the treatment of diabetes. A paragraph about it appeared in a newspaper which, although conservatively worded, so that it did not suggest too much, inspired a question in the Senate as to placing the drug on the free list. This suggestion was at best premature, and indeed many competent people regret the fact that drugs for the oral treatment of diabetes have been released to the public at all, even though on a doctor's prescription. However, since they have been released, it is important to know their uses and their limitations.

In 1955 certain German investigators noted that the administration of some sulphonamides caused a reduction in the level of blood sugar. One of these, 1-butyl-3, paramino-benzene sulphonylurea (BZ55)-later called carbutamide, was considered worthy of extensive clinical investigation. Two groups of German workers, H. Franke and J. Fuchs, and F. Bertram E. Benfeldt and H. Otto in October, 1955, in the Deutsche medizinische Wochenschrift, published the results of clinical trials, with carbutamide. Reduction in blood sugar level and control of glycosuria were observed in 80% of diabetic patients receiving the drug. Later observations made in other parts of the world were published, and these have been summarized by R. H. Unger and J. W. Davidson, Junior. Bertram and his co-workers found that most mildly diabetic subjects over the age of 59 years reacted well. None of them had been using insulin. Another similar group receiving insulin were controlled satisfactorily when carbutamide replaced insulin. In younger patients carbutamide therapy did not significantly alter insulin requirements. Other observers obtained similar results. E. Downie, J. Bornstein and B. Hudson in Melbourne made clinical trials with carbutamide on a selected group of 28 patients, none of whom were juveniles. There were 19 successes and seven

failures. Five of the patients responding to carbutamide had previously required insulin of control.

The general opinions of workers who have investigated the use of carbutamide may be summarized as follows. Carbutamide is effective in the management of diabetes of the "adult" type, characterized by mildness and stability of the disease, a relative tolerance to insulin, maturity at onset and often obesity. Failure to respond to carbutamide can be expected in the "juvenile" type, characterized by severity and liability of the disease, insulin sensitivity and onset during youth. Side reactions are important. Earlier workers found no serious side reactions following the use of carbutamide. However, Downie *et al* observed four cases of granulocytopenia in their 26 patients although it was not extreme or persistent. J. C. Phemister and J. D. Baird and L. J. P. Duncan have reported the occurrence of thrombocytopenia and leucopenia in several patients treated with carbutamide. They suggest that the toxic potentialities of this drug preclude its clinical use in the future, and that further long-term clinical studies should be confined to tolbutamide. Other reports confirm the dangers associated with the use of carbutamide, and apparently it has been withdrawn from distribution, in America at least.

Shortly after the introduction of carbutamide another compound was made available which differed from carbutamide only in having the NH² group. The substance is 1-butyl-3-p-toluene sulphonylurea and is called tolbutamide. Carbutamide is a sulphonamide and, in addition to its hypoglycaemic properties, has a potent antibacterial action. Tolbutamide has no antibacterial action, but acts in almost the same way as carbutamide in producing hypoglycaemia. The only side effects which seem to have been noted the use of tolbutamide are occasional skin rashes.

Unger and Davidson treated 18 diabetes with tolbutamide. Seven of 12 patients with stable adult diabetes given three to six grammes per day showed diminution in fasting hyperglycaemia and suppression of glycosuria. All but one of these were adequately controlled by diet alone. Large doses of tolbutamide did not benefit patients with labile diabetes. Barid and Duncan have analysed the hypoglycaemic response to tolbutamide in contrast to that to carbutamide. It has been assumed that the response to and hence the therapeutic administration of the two drugs are identical. This is not the case. The hypoglycaemic response to a single dose of tolbutamide is of much shorter duration than that obtained with carbutamide, owing to the difference in the rate of fall in the concentration of the two drugs in the blood. Both drugs are rapidly absorbed, but there is considerable variation in the plasma level of both drugs following the administration of the same dose. Carbutamide escapes in the urine relatively slowly, the "half life" in the blood being 30 to 60 hours. The half life of tolbutamide on the other hand is about five to eight hours; so that if single doses of 1.5 grammes are given daily, in most cases eight to ten hours after the administration of the drug the concentration in the blood has fallen below the minimum effective range. On the other hand, the effect of carbutamide is cumulative. Because of this most patients will achieve adequate therapeutic levels through out the 24 hours by taking the drug twice a day, the first dose at breakfast time and the second eight to ten hours later. Tolbutamide does not improve glucose tolerance, and its hypoglycaemic effect is due solely to a reduction in the fasting glucose level. Diabetic patients most suitable for treatment with tolbutamide are those who show moderately high fasting glucose values in the blood with

relatively good glucose tolerance. Certain patients, in middle or later life, who have recently developed diabetes may be well controlled by one dose per day.

Both drugs appear to have the same effect on glucose metabolism. How they act is not yet known with certainty. They are in no way insulin substitutes. The liver is essential for their action, and there is considerable evidence that they act on the process of neogenesis of glucose from proteins in the liver. Downie and his colleagues state: "It is a sobering thought to realize that the absence of glycosuria in a patient treated with a sulphonylurea may prove to be a measure of harmful inhibition of the metabolism of protein by the liver."

To sum up, carbutamide can be ruled out because of toxic effects, but it would seem that in certain cases of diabetes tolbutamide may be a useful drug. An important comment is made by P. K. Bondy in an editorial note in the section on metabolism of "The Year Book of Medicine (1957-1958 Series)" at page 692: "There is no evidence that tolbutamide is a substitute for insulin: indeed its effects are quite different from those of the hormone. The critical question is whether reducing the blood sugar without appreciably altering the rate of glucose utilization is important. Certainly the basic principles of good diabetic management still apply; adequate dietary control, insulin if needed, prevention of obesity are all important. In a few cases, tolbutamide may prove to offer something of value to patients who are blind or otherwise find insulin hard to administer; but for most diabetics the new drugs still appear experimental." There is yet much to be learned of the activity even of tolbutamide before its general therapeutic use can be recommended.

Notes & News

CENTRAL HEALTH COUNCIL'S EXECUTIVE MEETS

The Executive Committee of the Central Council of Health met in Simla on May 3. The meeting discussed the shortage of staff for primary health centres in the rural areas. It was stated that, in view of this shortage, the targets for starting primary health centres under the Community Development Programme during the second Plan period might need revision.

In a note circulated to members of the Executive Committee on the working of the centrally assisted Five Year Plan schemes, it was pointed out that the National Malaria Control Programme had been implemented with satisfactory results. With the change-over to the programme of eradication, freedom from malaria might be confidently anticipated in the next five to seven years.

The note said that the BGG Vaccination Programme had also made gratifying progress. Institutional facilities for the care of T.B. patients, too had expanded during the last 10 years. The programme for T.B. clinics and domiciliary treatment for T.B. patients had, however, not made much headway. After-care re-habilitation and the isolation of advanced cases were necessary.

Progress in the implementation of the national programmes for controlling leprosy and filariasis had not been as rapid as desired in the context of the wide prevalence of the diseases.

It was emphasized in the note that assistance from Central sources for training programmes had not always been fully utilized in spite of the universally felt need for trained personnel. An assessment of man-power requirements well ahead of the date of incumbency needed to be made and the training programme adjusted to phased needs.

Referring to water supply and sanitation schemes, the note said that although the picture was different today from what it was in 1954, when the National Water Supply and Sanitation Programme was initiated, the problem was vast and much needed to be done.

Earlier, the Executive Committee considered a proposal for the enactment of Central legislation for the control of leprosy. It was generally agreed that such legislation should be promoted and in that connection the following aspects should be taken into consideration: the legislation should provide for compulsory segregation of lepers who were beggars, and it should incorporate clauses enabling the State Governments to enforce its provisions as and when called for. It was also agreed that the States should be requested to conduct surveys in their areas to collect data.

The Executive Committee also reviewed the progress made in the various States in respect of centrally-aided schemes under the second Five Year Plan. In this connection the progress of the Filaria Control Scheme, the Family Planning Programme, the Programme of Primary Health Units and the problem of venereal disease were discussed. With regard to family planning it was stated that sterilization of either the male or the female had not been accepted as a policy of the Government of India. However, some States such as Madras, Kerala and the Punjab had been subsidizing operations for sterilization.

AFTER-CARE OF T.B. PATIENTS

Under the scheme of T.B. rehabilitation centres, eight of which are proposed to be established during the Plan period mainly in association with T.B. clinics, patients who are under domiciliary care will be trained in handicrafts and cottage industries, the object being to enable them to earn a living or at least supplement their incomes. The Government of India have sanctioned

proposals for the establishment of such after-care and rehabilitation centres by the Governments of Madras, Uttar Pradesh and West Bengal. Proposals for the establishment of centres are awaited from the Andhra and Bombay Governments and the construction of a centre in New Delhi is proceeding. Under the same scheme it is proposed to expand the existing rehabilitation colony at Madanapalli.

ISOLATION BEDS

Proposals for the establishment of nearly 1,000 isolation beds during 1958-59 for T.B. patients have been received from the State Government. A provision of Rs. 10 lakhs has been made for this purpose during the current financial year.

During 1957-58, the Government of India approved the establishment by various State Governments of 1,448 isolation beds for advanced T.B. patients living in unhygienic houses. It is proposed to establish 4,000 T.B. isolation beds in hospitals in the various States during the Plan period. A Central subsidy at 50 per cent of the non-recurring expenditure up to a maximum of Rs. 1,250 per head is given to the State Governments under the scheme.

T. B. TRAINING CENTRES

To meet the demand for personnel for anti-T.B. work, a scheme for the establishment of 15 demonstration and training centres has been included in the Plan.

Facilities for the training of X-Ray and other technicians and home visitors under the scheme are already provided in various parts in the country and especially at the demonstration and training centres at New Delhi Patna, Trivandrum, Madras and Nagpur, the U.N.T. Sanatorium at Arogyavaram and the All-India Institute of Hygiene and Public Health, Calcutta.

There is also a proposal to establish a National Tuberculosis Centre, at an estimated cost of Rs. 44 lakhs, in association

with UNICEF, who have allotted 12,75,000 in their 1958 budget for assistance to the National T.B. Control Programme of the Government of India.

An important countrywide survey was started in September 1955 to determine the incidence of tuberculosis in the country by X-raying the population on a sample basis. The scheme is being carried out under the auspices of the Indian Council of Medical Research. A provisional estimate places the number of people suffering from tuberculosis in India at about 2.5 million.

NEW T. B. CLINICS

Sixty tuberculosis clinics were established during 1957-58 in various part of India. Proposals for the establishment of 60 more during 1958-59 are under the consideration of the Government of India. A sum of Rs. 30 lakhs has been provided for this purpose. This is part of the scheme for the establishment of 200 new clinics and the upgrading of 100 existing clinics during the second Plan period.

PLAN PROVISION FOR FAMILY PLANNING

For execution of the various facets of the Family Planning Programme, the sum allocated for the second Plan is Rs. 497 lakhs.

Rs. 400 lakhs of it is intended for the schemes of the Centre and Rs. 97 lakhs for schemes of the State Governments.

The aim is to educate the people on the need for limiting families in the larger context of national, economic and social progress.

The population of India is growing at the rate of 5 million persons on an average every year.

A large-scale opening of family planning clinics and centres, at which instruction in family planning would be combined with popularization of the methods by which the objectives can be attained, is the first item in the programme.

Priority is given to the training of persons like doctors, health visitors, social workers and field works.

During the second Plan period, 20,000 rural and 500 urban clinics are proposed to be established throughout the country in addition to 147 set up in the first Plan period.

For the training of personnel, provision has been made at three institutions, namely, the Family Planning and Research Centre in Bombay, the Family Planning Demonstration and Experimental Centre at Ramanagaram, Mysore, and the All-India Institute of Hygiene and Public Health, Calcutta.

To carry out further studies in population trends and research work on better and effective contraceptives, two demographic centres have been started—one at Bombay in collaboration with the Dorabji Tata Trust, which will also function as a regional centre of the United Nations, and the other in Delhi under the auspices of Delhi University.

During the month of April, seven family planning clinics were sanctioned by the Government of India—six in the urban and one in the rural areas.

Reports received from various States indicate that Family Planning Officers have been appointed in Andhra, Bombay, Kerala, Mysore, Punjab, Rajasthan and West Bengal. A part-time Family Planning Officer has been appointed by the Delhi Administration, while family planning work is being looked after by the Maternity and Child Welfare Officers of Health in Assam, Bihar, Bombay, Jammu and Kashmir and Himachal Pradesh.

Family Planning Boards have also been formed in all the States except Madhya Pradesh and Punjab.

During the period 1956-58, 309 rural and 163 urban clinics were established as against a target of 300 rural and 73 urban clinics.

An amount of Rs. 25 lakhs was provided for the family planning programme during

1957-58. Expenditure, including the amounts sanctioned, was Rs. 26.13 lakhs.

For family planning work during 1958-59 a provision of Rs. 46 lakhs has been made and 300 rural and 80 urban clinics are to be opened.

A seminar of Medical Officers employed in the Contributory Health Service Scheme of the Government of India was held in New Delhi on May 18

RAPID INCREASE IN WORLD POPULATION

The world's population is increasing by 5,400 an hour—47 million a year—and is expected to be double its present estimated 2,737 million before the end of this century.

Reporting this in its Demographic Year Book for 1957, the United Nations said the population had increased almost by a quarter in 20 years, and the estimated birth-rate is now 34 per 1,000 inhabitants, against a deathrate of 218.

The Dutch live longest (71 years for men and 74 for women) and the people of India die soonest, the life expectancy for both men and women being 32, the statisticians found. They also established that Latin America is the world's fastest-growing area, though numerically Asia leads, adding 24 million to the population every year.

The Year Book reaffirmed that women live longer than men in every country for which statistics were available. In the United States, it said, the death-rate for men is 37 per cent higher than for women—34 per cent higher in Canada. 33 per cent in Argentina and 25 per cent in Australia.

Reasons for the differences had not been isolated, the statisticians said, but there were possible biological causes and "certainly the conquest of material mortality has added the female in achieving the favourable position she now occupies." the Year Book observed. At the same time, it noted that accidents were a leading cause of death among males of most ages up to 44.

Though infant mortality had reached "phenomenally low" levels in many countries, the document said, Burma, Brazil, India and parts of Africa still showed high rates. Sweden had the lowest infant mortality (17 per 1,000 live births) in 1956, with Iceland, the Channel Islands and the Netherlands close behind.

Among the causes of death, cancer, accidents and heart disease head the list, the Year Book reported.

LEPROSY WARD FOR RANIPET HOSPITAL

Dr. V. R. Thayumanaswamy, Director of Medical Services, Madras, on June 3 declared open the Dr. Louisa Hart Leprosy Ward at the Scudder Memorial Hospital at Ranipet. Mr. T. P. Bhaskara Thondaman, Collector of North Arcot presided. The dedication service of the Leprosy Ward, constructed at a cost of Rs. 20,000 was performed by Rev. E. Tychicus.

Dr. J. C. Savarirayan, Medical Superintendent of the Hospital, welcoming the

gathering, said that the ward was constructed at a cost of Rs. 20,000, 50 per cent of the total cost being given by the Government under the N.E. Scheme and Rs. 2,000 by Messrs. Parry and Co.; Ltd., and the balance donated by the philanthropists and certain missionaries from America.

While declaring opening the ward, Dr. Thayumanaswamy said that the Government were taking all precautionary measures to arrest diseases. He said there was a dearth of personnel in the medical field and they were taking quick measures to enlist the services of more medical men and also to open several health centres during the Second Five-Year Plan period. He praised the services of missionaries in the district and especially of Dr. J. C. Savarirayan, Chief Medical Officer of the Scudder Memorial Hospital.

Dr. V. R. Thayumanaswamy and Dr. M. V. Krishnamoorthy, District Medical Officer, later visited the Primary Health Centre at Lalapet village. FOC.

—via Hindu.

A Proud son of India

Dr. R. V. Rajam, M.B., M.S., F.R.C.P., F.R.S. (Eng.)

It is our privilege to record with pride, the election of Dr. R. V. Rajam, M.B., M.S., F.R.C.P., F.R.S.(E), as a Fellow of the Royal Society of Edinburgh. Dr. Rajam won the Johnstone Medal in the year 1918. The Johnstone Medal is awarded to the best outgoing student by the Medical College, Madras. His career has been a very remarkable one indeed. Started as Assistant to the Professor of Surgery, he rose step by step in the Madras Medical Service, reaching the top most. He became the Professor of Venereal Diseases in the Madras Medical College and in 1952 he was appointed as Director of the Institute of Venereology. He became the Principal of the Madras Medical College and later became the Dean of the Government General Hospital and Madras Medical College.

As a member of the I. C. M. R. and the Madras State Research Committee and in various other capacities Dr. Rajam distinguished himself. As a research worker, his contributions to the subject of Venereal Diseases have won fame Internationally. In the international sphere Dr. Rajam occupies a very distinguished place, having been the Vice Chairman of the Section dealing with Venereal Diseases and its control under the auspices of the W.H.O.

His contributions to the Medical journalism has been immense and he has so far published over 100 papers and his reputation in the control of Venereal Diseases has been far and wide. The decline of venereal diseases and what appears to be a successful control of Treponematoses in our country should be credited to Professor R. V. Rajam, who has toiled ceaselessly to help remove this scourge from this country.

It is a matter of great pride to the Indian Medical Profession that our endearing Professor has rightly been elected a Fellow of the Royal Society of Edinburgh, which honour has been conferred on such distinguished citizens as Sir Walter Scott, Kelvin, and Benjamin Franklin. The Royal Society of Edinburgh has been in existence for over 175 years; uptill 1956 the Royal Society had only 825 members of whom only 44 were foreign Fellows. It is therefore, with great pride we heartily congratulate Dr. R. V. Rajam on being included in this limited list of distinguished personages.

We wish him greater and greater Honours and pray for his health, happy and long life and continue to serve the humanity for its well being.

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OBITUARY

The Eminent Doctor & Educationist

M. R. GURUSWAMY MUDALIAR DEAD

We deeply regret to report the death of Dr. M. R. Guruswami Mudaliar, a physician of great repute, philanthropist and well-known educationist.

Dr. Guruswami Mudaliar was born in 1880. Joining the Madras Medical College in 1902 with a scholarship granted by the Mysore Government, he took his M. B. and C. M. degree and won the Chipperfield Gold Medal for Surgery. He joined the Mysore Government service as the officer in charge of anti-plague campaign.

Dr. Mudaliar joined the Madras medical service in 1910, standing first in the competitive examination for recruitment. He was deputed to Dehra Dun to specialise in radiology and on return was posted as lecturer at the Raja Mirasdar's Medical School, Tanjore, where he held the post for five years. In 1915, he was transferred to the Madras General Hospital as Assistant to Col. Elwis, a reputed medical man. After a short stay, he was again transferred to Tanjore. In 1917, he was appointed Physician in the General Hospital holding the rank of a Civil Surgeon after only seven years of service. He took the Doctorate in Medicine in 1920, the first year in which the degree was instituted in the University. In the same year, he was appointed Professor of Materia Medica, a post till then reserved for senior I.M.S. officers. Incidentally, he was the first Indian to occupy that chair. When a chair in therapeutics was created for the first time in 1927, he was appointed to that post. In 1929, he was deputed to U.K. to study the methods of teaching that subject, (therapeutics). Returning to India from England in 1930, he joined the post of

Professor of Therapeutics, which he held till he retired in 1937.

After retirement, Dr. Mudaliar was appointed Honorary Director of the Indigenous system of medicine and he held that position till June 1955. It was entirely due to his work that the school of Indian medicine was raised to the status of a college. Many improvements were effected and a degree course was instituted in that college. Research schemes and schemes for the training of village v aids were undertaken and encouraged by him in that institution.

Besides being a member of both the Senate and the Syndicate of the Madras University for over a decade, he was also a nominated member of the Madras Legislative Council. In recognition of his services, he was awarded the Honorary Degree of Doctor of Science by the Madras University at the Special Convocation held in connection with the centenary celebrations of the Madras University in January last year, when Prime Minister Nehru took part.

He was a doyen of the medical profession in South India. His remarkable personality and his enthusiasm for the cause of the suffering humanity, particularly the poor, had always endeared him to all classes of people. He was a staunch fighter for the rights of the Indian doctors and if all that he has done during his service in the State are revealed, it will be realised how strongly he stood for the rights of the Indian doctors against powerful members of the Indian Medical Service of foreign domination. He was the first President of the All-India Association of Physicians and was, for a long time, connected with the Medical Council of Madras, where he did outstanding work.

EDITORIAL

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