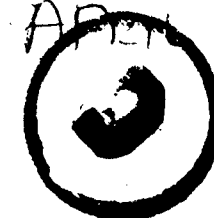


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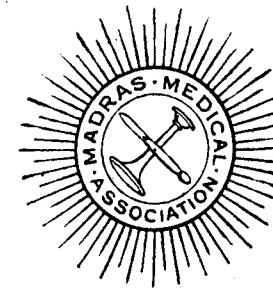
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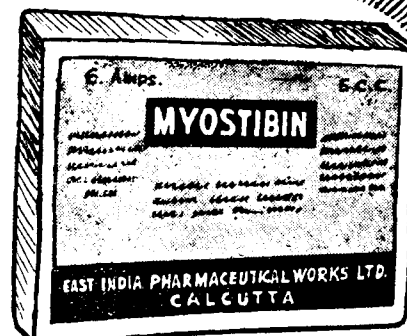
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EDITORIAL

In this issue elsewhere is published an article on "Our Medical Task" by a learned Doctor. He discusses the reports of the Bhore Committee and the Chopra Committee. There is also under the heading "Association Notes" a summary of the discussion that took place at a special meeting of the Association held to consider the Chopra Committee report. The implementation of the Chopra Committee report is considered neither desirable nor feasible. And the financial resources necessary to implement, even in part, the Bhore Committee scheme are not at present available. The state governments are manned by persons who fully represent the people of the country, who really love their people and wish to do their best for them. But the strained finances of the states in the after-math of the second world war and the events that followed the partition of India, put a brake to the urgently needed progress of Medical Education and Medical Relief. It is admitted on every hand that we want more doctors trained in the discipline of modern scientific methods. About eight to ten times the number turned out every year at present are required. Where are the doctors to come from? What is to be done?

We wish to put forward the humble suggestion to all interested in medical education and medical relief and in the physical welfare of the Indian masses, that the only realistic solution immediately possible to tackle this situation is to **reopen the medical schools**. We have heard objections to such a proposal that it retraces the general policy, followed for some time now, of abolishing the Licentiate course to avoid a double standard of basic medical proficiency. But we keep it firmly in our mind that this suggestion is to be only a transitory measure. As the financial conditions improve, the schools will be gradually upgraded into colleges. However, the immediate difference in cost of outlay between opening a recognised medical college and a medical school is indeed very vast. A college requires recognition by the University and the Indian Medical Council, and it is only right that they should insist that the buildings and equipment of such an institution should bear a reasonable comparison with medical colleges in other more wealthy parts of the world as America or Europe, if the international standard of our medical degrees has to be maintained.

On the other hand, medical schools could certainly be started more economically, as there is no bogey of international standards or Medical council recognition. Wherever there is a district Head Quarter Hospital with accommodation for about 200 beds, it could be made a nucleus for starting a medical school.

By eliminating the minutiae in Anatomy, the non-essentials in Physiology and the details in Pathology and by skipping over the rarer uncommon conditions in clinical teaching, the academic course can be shortened. With the instruction confined to the fundamentals and the principles of the preclinical subjects, and with necessary emphasis on the preventive side of Medicine and the treatment of the more common diseases, it should be possible within a four year course to turn out a scientifically well trained medical man competent to face all reasonable essential medical needs. The product of such a school might not have the breadth and depth of knowledge to be an equal to the best graduates turned out by the medical colleges aspiring to the highest achievement in medical research and practice. But the Licentiate or Diploma holder turned out by the schools would be thoroughly efficient, as has been abundantly proved in the past, for the work for which he is primarily intended, i.e., to carry scientific medical relief to the lakhs of villages in rural India.

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Fractures Around the Elbow Joint*

BY

Lt. Col. V. R. T. SWAMY, M.S., F.R.C.S., M. Ch. Orth.

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Fractures around the elbow joint will be discussed under two headings.

1. In children.
2. In adults.

As preliminary to discussion, I would like to recall certain anatomical features regarding the elbow joint. The complicated articulation at the elbow comprises three joints with a single synovial cavity viz (1) The Radio-Humeral (2) The ginglymus Humero-Ulnar and (3) The superior Radio-Ulnar Joints.

The proper functioning of a joint very largely depends on the integrity of the cartilage covered surfaces of the bones entering into its formation and the preservation of their correct shape and alignment. Factors producing changes in the congruity of the joint surfaces, or the alignment of the bones, immediately above or below the joint, are likely to interfere with the functional efficiency of the joint.

The plane of the Humero-Ulnar joint passes obliquely downwards and medialwards being inclined at an angle of 6 degrees to 10 degrees from the horizontal and therefore in the extended position the Ulna makes an angle outwards of about 10 degrees with the Humerus. This is known as the carrying angle and is most evident in supination, because, with pronation, the Radius swings inwards around the Ulna and apparently obliterates the angle. This explains why the pronated hand is carried towards the face in flexion, and to the outside if supinated and flexed.

* Lecture delivered during the Silver Jubilee Meeting of the Coimbatore District Medical Association.

Three important nerves come into close relation with the lower end of Humerus, viz, Ulnar, Median and Radial; of these, the ulnar on account of its vulnerable position in the post-condylar groove behind the internal epicondyle is the most frequently injured.

The Brachial artery is liable to be compressed or injured by the sharp spike-like lower end of the upper fragment in Supracondylar fractures.

Further, the venous return from the flexor group of muscles of the forearm converges to one main Profunda vein, which traverses the antecubital fossa and empties into the median capital vein after piercing the tense bicipital fascia. Here it is likely to be dangerously compressed by the haematoma in a supracondylar fracture, made worse by injudicious flexion and tight bandaging in front of the elbow and by some authorities considered to be important in the production of the dreaded Volkmann's Ischaemic contracture.

Before discussing fractures in particular, I would like to bring to your notice the condition of traumatic arthritis of the elbow which is also common and if not managed properly, is likely to give rise to serious consequences. A fall on the partially flexed elbow is likely to cause supracondylar fractures in children, and dislocations in adults; but if the injury is not a severe one, it may produce a momentary subluxation which reduces spontaneously or produces damage to the articular cartilage covering the bony ends and is not evident on radiological examination. But all the same, the joint has sustained injury as is evident by the oedema and swelling, limitation of movement and the muscular spasm.

Simply because there is no radiological evidence of actual fracture or derangement of the joint, it does not mean that the case can be treated lightly. That there has been fairly severe damage is evident by the oedema, swelling and muscle spasm and nature guards the joint by reflex limitation of movement. To go against nature by trying to force the phase of recovery is to add insult to injury and the joint rebels against this by putting forth excessive reactive process which leads to the inevitable myositis ossificans. The elbow becomes encased in a rigid casing of excessive bone as a result of this active but injudicious treatment, while the best result would have been obtained by 'masterly inactivity.'

It is indeed tragic to see elbows permanently ruined as a result of this ignorance and once the damage has been done treatment is of very little avail. The proper treatment would have been rest in a cuff and collar for about 3 weeks and gradual restoration of the movements of the elbow by patient's own effort. Passive movements and, still worse, active stretching and forcing the joint should on no account be done.

Fractures in Children.—It is needless to emphasise the importance of making an accurate diagnosis and the necessity of insisting upon good skiagrams taken in two positions. In adults, the skiagram is comparatively easy to interpret but in a child it may be very difficult. The difficulty is due to the fact that the articular ends of the bones in children are cartilaginous and transparent and apart from the ossifying Nucleus there is merely a clear space between the arm and forearm, which may contain fractures or displacements, though they are not revealed in the skiagrams.

It is therefore necessary to be familiar with the ages at which ossifications of various epiphyses take place.

The centre for the capitellum is the first to appear at the end of the 2nd. year, extends medially to form the greater part of the trochlea and fuses at the 16th. year. That for the medial epicondyle appears at 5 years and fuses at the 18th. year; For the medial part of the trochlea at 12 years and fuses at 16th. year; For the lateral epicondyle at the 13th. year and fuses at 17 years. All the centres of the lower end of Humerus except the one for the medial epicondyle fuse with each other to form an epiphysis which joins the shaft at about the 17th. year. The centre of the upper end of the Radius appears in the 5th. year and for the Olecranon at about 10th. year and they unite with the shafts at about 17th. year.

A few words about the examination of the elbow will not be out of place. Both elbows are exposed and the injured elbow is carefully inspected, the amount of the swelling and the nature of deformity noted. Movements are then tested; the relation of three cardinal bony landmarks determined and any area of maximum tenderness elicited. Good skiagrams are essential and if there is confusion about the interpretations of epiphysal lines in children, pictures of the opposite elbow should be taken for comparison.

In the presence of much swelling one should palpate the radial pulse and the condition of the circulation in the extremity should be carefully noted; When threatened Volkmann's contracture is suspected, a useful confirmatory sign is resistance to gentle passive extension of the fingers.

Varieties of Fractures.—

1. *Supra condylar fracture*

- (a) Extension Type.
- (b) Flexion Type.

2. *Fracture separation of the epiphysis.*

- (a) External condylar and capitellar fracture.
- (b) Internal epicondyle fracture.

3. *Fracture of the neck of Radius.*

Supracondylar Fracture.—This is one of the commonest fracture sustained by children and forms roughly about 2/3 of the injuries around the elbow in children. In a series of 106 injuries around the elbow in children,

Supracondylar forms 62.

T shaped fracture of lower end 2.

Fracture lateral condyle 21.

Fracture internal epicondyle 7.

Fracture neck of Radius and Radial head 10.

Fracture Olecranon 4.

Supracondylar fractures are divided into (a) Extension type and (b) Flexion type. In the former, the displacement of the lower fragment is backwards, and in the latter forwards; This latter type is extremely uncommon and forms only about 0.5%.

The common extension type is caused as a result of a fall on the hand with the elbow in slight flexion, the lower end of the Humerus is fractured and displaced backwards by the force acting through the bones of the forearm. The line of the fracture is transverse, about the level or just above the apex of the Olecranon fossa, with a slight obliquity from before backwards and upwards. The lower fragment is displaced backwards and upwards; of greater importance is the backward rotation or tilting of the fragment which is best seen in a lateral skiagram. Further, there is a lateral shift and rotation, which may be to the outer or inner side and is obvious in a A. P. skiagram.

Clinically the appearance is not unlike that of a posterior dislocation but the posterior outline of the elbow is straight instead of showing the normal convexity backwards, whereas in dislocation the outline becomes concave forwards; moreover, it is possible to make out that the relative positions of the three bony landmarks remain unaltered. Owing to the extreme laceration of the Brachialis muscle considerable extravasation takes place and the region becomes considerably swollen in 12 to 24 hours, making reduction of fractures more and more difficult if left for any great length of time.

Treatment.—In the past and even now, it is considered by some practitioners as a difficult fracture to treat and yielding unsatisfactory results; with satisfactory reduction and careful management the results are almost uniformly good.

Under anaesthesia and good relaxation the fracture is reduced. With counter traction in the region of the upper arm, steady traction on the forearm is made till such time as the lower fragment is made mobile. Then with pressure of the thumb backwards on the front of the lower fragment and pressure forwards by the middle and ring fingers of the same hand on the tip of the Olecranon, traction still being maintained by the other hand; at the same time, the elbow is brought into flexion while the fingers of the manipulating hand correct the backward tilting of the lower fragment.

But, before bringing into flexion, any outer or inner displacement should have been corrected as such displacement is obvious only in the extended position and cannot be made out in the flexed position. Otherwise, a persistence of this lateral shift will give a Cubitus Valgus or Varus deformity. The limb is then immobilised in flexion, the stretched Triceps muscle acting as a splint and preventing redisplacement.

At this stage, I would like to strike a note of warning about this flexion treatment. It is universally known as the method of Sir Robert Jones who laid down sound principles. Triceps acts as a splint and the flexion minimises the amount of callus formation in front so that limitation of flexion may be minimal. Much irreparable damage has been done by trying to put the elbow in acute flexion.

In the presence of much swelling around the elbow, this position of full flexion cannot be obtained straight away and it will be foolhardy to force it to acute flexion thereby endangering the peripheral circulation of the limb. A cardinal rule is therefore to note and to note without any possibility of doubt, that the radial pulse is felt clearly. When in doubt, drop the forearm an inch or more to ensure that the radial pulse is felt satisfactorily. The child is kept recumbent, the limb elevated, and when the oedema subsides in a day or two a further satisfactory reduction may be obtained after checking a preliminary skiagram. If this rule is followed, many of the serious complications may be avoided. Failure to follow this principle and consequent untoward result has earned for this fracture unwarranted notoriety.

Method of Immobilisation.—Many of the fractures after reduction are stable and require only the simplest method of a cuff and collar. Circular bandages and strapping in front of the elbow to maintain the position are not necessary. A complete Plaster of Paris cast is a real danger, as

dangerous swelling on account of reactionary oedema may take place unnoticed within the cast.

In Liverpool only a cuff and collar is used for almost all cases. In Prof. Platt's clinic in Manchester, a dorsal plaster slab, well moulded round the elbow is applied and retained by a wet muslin bandage to prevent recurrence of lateral and rotatory displacement and I think, may be usefully adopted to suit our conditions here.

In a series of 330 cases analysed by Siris, 72 cases or 22% there was no displacement. In such cases, there is no need to reduce; the fracture is ignored; only the traumatic arthritis is carefully managed in a cuff and collar for three weeks.

In a case where great swelling has taken place, or, if the reduction is made more difficult on account of the case being seen late, the question arises as what to do. Open reduction invariably leads to a stiff elbow joint. In such cases, the gradual method of reduction by suspension and elevation of the limb should be adopted and by careful subsequent regime a useful functional efficiency can still be attained. It is not necessary to get perfect anatomical reduction to ensure a satisfactory range of movement. The aim should be to correct the backward tilt. As the child grows, the anterior spur gets moulded and reduced and moreover, the alteration of the alignment is also reduced as the growth in the length of the bone takes place. Hence, one can confidently reassure the parents that the child is likely to gain in movement as it grows up.

Period of Immobilisation.—After about 3 weeks of maintaining in flexion and when tenderness around the fracture, and the muscle spasm have disappeared, the forearm is dropped a few degrees by increasing the length of the cuff and collar. The child is seen again in three days and if it can voluntarily flex the elbow to its original position, the forearm can be lowered still further; if not a further period of immobilisation is required. By degrees every 3rd. day the forearm is gradually lowered.

During this period, active movements of flexion and extension is practised within limits permitted by the cuff and collar. When about 135 degrees extension has been attained, the cuff and collar is discarded and full extension is reached with ordinary use of the arm by the child's own unaided effort. No massage or assisted movements by others are required. Recovery of movements is not assisted by carrying heavy weights etc., on the contrary, it is only delayed or made worse.

I have discussed the treatment and after treatment at great length as unfortunately too many cases are seen by me after irreparable damage has been done, when the elbow is rigid with myositis ossificans, as a

result of bad management of injuries around the elbow and when it is too late to do anything good.

Fracture of External Condyle.—Fracture of External condyle is the next in frequency forming about 20 per cent of cases of elbow fractures. It occurs between 5 and 15 years of age when the Capitellar epiphysis is of sufficient size before fusion takes place. The separated fragment includes the Capitellum, lateral half of Trochlea and a small part of the diaphysis; the external lateral ligament and the common extensor muscle origin are attached to it.

Various types of displacement may occur depending upon the integrity of overlying structures. With partial tears, there is only slight or no displacement and the congruity of joint surface is preserved. With complete tears, the fragment rotates about 90 degrees laterally and 90 degrees forwards, so much so that the articular surface looks upwards and medialwards and the fractured surface outwards and downwards.

Treatment.—The method of treatment depends upon the displacement. With slight displacement, perfect reduction can usually be secured by applying direct lateral pressure and pressing the fragment in place. The elbow is then treated in flexion as in other injuries.

When the fragment is rotated, it is essential to attain satisfactory reductions; as, otherwise, the elbow joint will be disorganised. Closed manipulation may be tried but very often operative reduction will be necessary. By a lateral incision, the fragment is exposed, replaced in position and secured by one or two cat gut sutures bringing together the torn structures around. Usually the fragment once placed in position stays firmly with elbow in flexion.

In imperfect reductions, fibrous union takes place and in spite of poor anatomical result, the functional result is satisfactory. On no account should the fragment be excised, as otherwise, the Joint will be permanently disorganised.

In case of fibrous union, there will be a tendency to increasing Cubitus Valgus with growth and the condition of 'Tardy Ulnar Paralysis' may be a complication usually after a lapse of about 8 to 10 years, requiring Ulnar nerve Transposition at that time.

Fracture of the Internal Epicondyle.—Between the ages of 7 and 17 the internal epicondyle forms a separate mass of sufficient size to become detached by Valgus strains of the elbow. The amount of displacement depends upon the integrity of the soft parts around, viz., the ulnar

Collateral ligament and the common flexor origin. At one end there may be a partial separation and the other end, the fracture may be accompanied by a backward and outward dislocation of the elbow, or in some cases, the dislocation may spontaneously reduce itself but with the fragment sucked into the joint and trapped between the trochlea and the sigmoid notch of the Ulna. This latter condition should be recognised by clear skiagrams showing the hemispherical body between the bones in Lateral view, and by the widening of the joint space on the inner side in the A. P. view.

Treatment.—When the displacement is minimal, the important part of the treatment is the treatment of the associated Traumatic Arthritis. Rest in flexion by cuff and collar for 3 weeks and movement regained slowly by active exercises.

When the fragment is locked in the joint successful manipulation may bring out the fragment, but very often operative reduction is necessary. The inner side of the joint is opened, the fragment is coaxed out and replaced. But in view of the fact that the post condylar groove will be altered and likely to give rise to traumatic Ulnar nerve neuritis, it is better to excise the fragment, and this can be done with impunity as contrasted with that of the lateral condyle which forms part of the articular surface.

Fracture of the Neck of Radius.—These form about 10% of injuries in childhood. The fracture is usually greenstick, the line running transversely through the neck and is produced by a fall on the outstretched hand which impacts the head of the Radius against the Capitellum. The displacement of the head is outwards and forwards in relation to the shaft.

Examination reveals that flexion and extension of the elbow are much freer than pronation and supination.

Accurate reduction is essential as otherwise growth at the epiphysial line will direct the head away from the articular surfaces of both Humerus and Ulna. Manipulative correction is attained by extending the elbow, adducting the forearm on the arm and pressing firmly over the front and the outer aspect of the head.

If gross displacement has not been corrected by closed reduction, the head is exposed by a small incision on the lateral side and the angulation corrected under vision. Excision of the head does not ever become necessary in a child.

- Fractures in Adults.**—1. Fracture Head of Radius.
2. Fracture Olecranon.
3. Intercondylar T or Y shaped fracture of lower end of Humerus.
4. Fracture Coroid Process.

Fracture Head of Radius.—In an analysis of 722 elbow injuries treated in the Royal Infirmary, Liverpool, 459 cases or 64% were fracture of the head or neck of Radius. It formed nearly 5% of all fractures treated during the same period.

It is caused by a fall on the out stretched hand with impact of the head of Radius against the external condyle of the Humerus.

The injury is easily diagnosed by the swelling of the joint, limitation of rotation and definite localised tenderness over the head of Radius.

A good skiagram confirms the diagnosis and reveals the type of fracture which decides the line of treatment to be adopted.

Types. —	
1. Simple crack fracture.	 20%
2. Marginal, usually 1/3 of the disc, either no displacement or slightly depressed	 40%
3. Marginal with displacement	 12%
4. Comminuted Fracture	 10%

It will be realised that simple crack fractures and marginal fractures of the outer and posterior quadrant, in which the articular plateau is not disturbed and parallelism with the Capitellum preserved form nearly 60% of the fractures of the Head of Radius. Treatment is therefore to ignore the fracture and treat the associated traumatic arthritis. Cuff and collar for 3 weeks and active movements started. On no account is the phase of recovery to be hastened by injudicious manipulation or massage.

Comminuted fractures in which the fragment is displaced upwards or separated too much where the articular plateau is thereby distorted require operative treatment. The decision for operation should be taken at once, as late excisions do not give good results.

The optimum time is within 48 hours; otherwise there is always the risk of extraskeletal ossification and functional efficiency will be impaired.

While operating, it is wise to do excision of the head of radius rather than remove only the loose bits of bone and leave the rest of the Head. The results of total excision is infinitely better than partial excision.

The operative treatment is a simple procedure. A 2-inches incision a third below and two thirds above the level of the joint on the posterior aspect gives direct exposure and the head excised with minimum dissection of the soft parts.

The limb is immobilised in flexion in a P. O. P. posterior slab for 4 to 5 weeks and the after treatment is adopted in the same way as detailed under Supracondylar fractures in children.

Fracture Olecranon.—"This, like fracture of the Patella, is due to muscular violence—result of opposing strains of a sudden forcible flexion of the joint against the resistance of triceps.

Ordinarily, if a bone is fractured, good function cannot be regained without bony union of the fragments and in this respect fracture of Olecranon resembles fractures of the sesamoid bones such as patella. If a gap between the fragments is left union occurs by means of fibrous tissue. This union from the patient's point of view of function is as good as bony union. It is not the fact that the upper fragment is united to the shaft of the Ulna by fibrous tissue rather than by bone that constitutes a disability, but the fact that there is separation between two fragments. Because of this separation two disabilities follow:—

1. Triceps lengthened, becomes weaker, and energy is used in taking up the slack. When compared to the Patella, a strong quadriceps is essential for maintaining erect posture but the strength of the triceps is less material to the patient.

The second disability of leaving a gap between fragments is that extension of the elbow is limited by about 20 degrees. In normal joint, Olecranon beak is received into the Olecranon Fossa and when there is upward displacement of the Olecranon beak as a result of fracture, there is no hollow to receive the beak and full extension is therefore limited. Although full extension of the knee is essential for normal knee function, full extension of the elbow is of less importance."

The above principles, laid down by Professor George Perkins, will guide the line of treatment.

When there is no separation of fragments as seen by skiagram, the elbow injury is treated as one of traumatic arthritis.

When there is separation, the age and the occupation of the individual should be taken into consideration. The gap can be made to close by full extension and union assured by immobilising for sufficiently long period in extension but then restoration of the movements of elbow is impaired, especially in persons over 40 age group.

In the younger age group, operative fixation should be considered especially if the fragment is large and includes half of the sigmoid notch of Ulna. Fixation may be done by a Vitallium screw or by a crossed mattress suture. If the fragment is small the question of excision of the fragment may be considered as it shortens the period of immobilisation, and the injury treated as one of traumatic arthritis.

T or Y shaped fractures of the lower end of humerus.—These are usually due to direct fall on the elbow and very often show flexion type displacement.

No injury of the elbow gives rise to more difficulty in treatment. Operative reduction is very difficult and if in addition fixation is secured by screws and plates, it inevitably leads to a very stiff elbow. Better results may be obtained by closed reduction, however imperfect it may be. Approximation of the loose fragments may be attained by firmly bandaging an Esmarchs rubber bandage and after unwinding this, the limb immobilised in a P. O. P. slab at right angle or slightly more. After 3 or 4 weeks, gradual restoration of function is attempted. In any case it will be wiser to warn the patient at the outset, that he has sustained a very severe type of fracture and that only a useful range of movement is aimed at.

Fractures of Coronoid Process.—This is only a partial avulsion of the tip. The Fracture is ignored, the limb put in flexion in a cuff and collar for 4 to 5 weeks and gradual restoration of function is aimed at.

REFERENCES

- G. Perkins: Fractures - Oxford Medical Publications.
- R. Watson-Jones: Fractures - E. & S. Livingstone.
- K. T. Dholakia Personal Communications.
- G. Perkins: Fractures of the Olecranon - B. M. J. 1936, ii 668.
- Murray: Fractures Head and neck of Radius - B. J. S. 1940.

Antibiotics - their trends and range in action

BY

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Therapeutics to-day seems to be firmly in the saddle and is riding hard. The full retreat of the 'Microbe' is in evidence and its rout ere long will be in sight.

During the past decade or less the precise value of therapeutic agents by laboratory and clinical methods has been determined. Medical men who get acquainted with new drugs and their claim to utility through the manufacturer, should be better equipped with knowledge of the assessment of the new drugs by responsible scientific bodies. The Therapeutics Research Committee of the British Medical Association and the Council of Pharmacy and Chemistry of the American Medical Association serve this function abroad. A similar committee has been constituted in India. The potent drugs may be either ineffective or dangerous if incorrectly used; the fine new weapons sometimes having a boomerang effect in the hands of the ignorant.

The Antibiotics.—When penicillin was first introduced in 1929 and put to use subsequently, it was under the shadow of the sulpha drugs. A decade later it was hailed as the 'greatest contribution of medical science to the 20th century'. The door opened by Fleming, tends to be a veritable flood gate. The antibiotics despite their being a comparatively new innovation in the field of therapy, are marching in full force. Newer and newer ones are coming in and to-day some tend to obscure the parent penicillin. It is learnt that many American manufacturers of antibiotics, have directed their Indian representatives to send clods of earth from different parts of India for study, for evidence of precious therapeutic agents from soil organisms lying hidden in the roots of grasses and shrubs of this country indeed strange is the modern medical 'Eldorado'.

A brief account of the members of the group of antibiotics is attempted with reference to recent findings.

Penicillin.—Three handicaps of penicillin at the time of its launching have been successfully met and set aside, *i.e.*, (1) Instability, (2) Short action and (3) Closure of oral route for administration.

1. **Instability.**—The crystalline sodium salt contains 95 per cent of penicillin and is stable at room temperature. It could be administered subcutaneously. This is a great advance, as the early amorphous form

was so unstable that it demanded a bacteriology lab' and cold storage for its use. The amorphous sodium salt is hygroscopic and deliquesces in contact with air, while the calcium salt is a bit more stable. Esters of penicillin are more effective orally than the ordinary salts, but sometimes found inert or even toxic when administered parenterally.

2. **Short action.**—The original three hourly intramuscular administration, not to mention the continuous intravenous drip of penicillin was indeed a great handicap-frequent pricks in one, immobilisation in the other, nocturnal annoyance to the doctor and patient and an over all wastage of time and energy. The brave attempt to circumvent this drawback at first was to delay excretion of penicillin by administering competitive substances like caronamide, diodrast, para-amino-hippuric acid etc. These substances of lower threshold value than penicillin, were said to be more easily sent out in the 'scramble' at the renal tubules for exit, leaving the comparatively 'stolid' penicillin to wait in the blood stream. Unfortunately these substances interfere with kidney function. Hence other methods were sought. Could absorption from depots be delayed? After considerable experimentation for suitable base, with soluble and insoluble penicillin, the medical profession was offered an equi-molecular procaine penicillin compound as a suspension in oil. Beeswax was given up as it frequently caused sterile abscess.

A single large dose of this penicillin may maintain optimum blood level of penicillin for 36 to 48 hours. This compound now promises to yield results with one injection, for conditions like gonorrhoea and pneumonia.

A new watery penicillin suspension is available of late called 'Fortified Duracillin' or 'Aqueous procaine penicillin fortified' said to give a higher early initial level of blood penicillin which level could be maintained by its predecessor the procaine penicillin compound in oil. This is in line with the complementary effects of two drugs like adrenaline and ephedrine, oxytocin and ergot or strophanthin and digitalis.

When on this subject one may be permitted to refer to a tendency to modify a fundamental concept with reference to therapy with chemotherapeutics. One of the main principles in the treatment of acute conditions with chemotherapeutic agents like the sulpha compounds or the antibiotics is maintenance of an optimum blood concentration of the drug in use, for a required minimum time. The level of concentration and the time of its maintenance is worked out in the lab. and clinically. This is being challenged by certain observations with penicillin. A strict regimen according to these observers has the face of scientific procedure, but in reality unnecessary. Discontinuous therapy with penicillin has been tried with results comparable to the continuous therapy, whose object

has been to maintain the optimum blood level for a specified time. One or two daily injections of penicillin to 'susceptible infections' like staphylo, strepto, penumo and gonococci were quite effective. Possibly in the case of serious infections and septicaemias (subacute bacterial endocarditis) a stricter regimen has to be observed. If this challenge is borne out by further data and accepted, it will be a great economic gain. If discontinuous therapy is deemed as good as continuous therapy it would also mean that conventional dosage schedule is based on unproved assumptions: a therapist then as a class show "sheep mentality" in following what the 'Originators' had prescribed without evolving their own schemes based on careful observation. Incidentally the 'standard treatment' of the defence services for malaria, amoebiasis, venereal affections, etc. will be viewed with subdued amusement. (Those interested in this subject are referred to "Discontinuous therapy with Penicillin" by Ralph Tompaef. Jour. Amer. Med. Assoc. Feb. 26th 1949).

3. **Oral route.**—It was thought early that adequate blood concentrations of penicillin cannot be obtained by oral medication. The high acidity of the stomach was thought to be a deterrent factor in the main. Hence buffering with alkalis (aluminium hydroxide and calcium carbonate) protection by suitable coating, were resorted to for oral administration of penicillin. Penicillin, when administered on a fasting stomach, not less than half to one hour before a meal or not less than two and a half hours after a meal, tended to build an adequate blood level. The simultaneous administration of alkalis tend often to inactivate it.

By rectum, penicillin is inactivated by penicillinase which is produced by organisms like B. Coli. The aerosol form of therapy is mainly administered by mouth (sometimes inhalation) for half an hour at least twice a day. This form of therapy is of great value in nasopharyngeal and otolaryngeal infections, bronchitis etc. The utility of this channel of administration is to be proved in conditions like pneumonia and bronchiectasis, though the manufacturers advocate for these as well.

The trochiscus can be used again for local affections in the main. Several reports have come into show that the use of trochiscus may lead to sore mouth if unguarded. There is first an yellow discolouration of the skin, leading on to stomatitis and ulcerated tongue. An interesting suggestion has been made that this may be due to penicillin providing in the mouth a favourable environment for some species of fungi which otherwise are kept down by the organisms susceptible to penicillin, very much like B. Coli being recovered from the sputum of patients treated with penicillin for bronchiectasis. It is therefore suggested that penicillin lozenges should not be continued for more than 2 or 3 days. However,

oral route for systemic diseases is not yet perfected unless one gives a large dose hoping that at least 25 per cent would reach blood in the required concentration.

Reactions after Penicillin.—In the early days of penicillin therapy it was thought that the reaction rate was practically nil. Today things look different after extensive use of penicillin for the treatment of syphilis. The overall reactions may be noticed in about 10 per cent of cases treated for syphilis, the majority of the reactions however being mild and transient. A Herxhemier like reaction may be noticed even non syphilitic diseases due to penicillin susceptible organisms. Chemically, penicillin resembles an amino acid and can therefore act as allergen. In the treatment of early syphilis, Herxhemier like reactions need not be an indication for discontinuance; but in the treatment of cardiovascular or neural syphilis, one has to be guarded. Treatment of a patient previously sensitised to penicillin may be hazardous. Urticaria and exfoliative dermatitis that occasionally follow penicillin therapy, not to mention reactions in general, it is not sure if due to impurities or the medicament itself.

Resistance to Penicillin.—Distressing data regarding a large number of strains of staphylococci being resistant to penicillin are collected in the United Kingdom. This seems to be the result of widespread use of penicillin during the past few years. Medical men are aware of streptomycin resistant tuberculosis organism being on the increase as well. The elusive microbe defies subjugation. Is this an early sign of the short span of life of the Antibiotics?

Streptomycin.—Before the advent of streptomycin, a few other antibiotics were tried and found wanting. Gramicidin, tyrothricin, streptothrycin, patulin, actinomycin are practically out of the field of therapy. Tyrothricin held the field for some time as a topical agent in nasal sinus infections. But delayed yet alarming signs of meningitis (chemical) were noticed after its use, though the initial response was good. Hence it is being given up. Then came streptomycin and its scope of utility seems to be on the increase.

Streptomycin can be given orally though absorption is not steady. It has partial sterilising effect on the alimentary tract as several encouraging reports on gastroenteritis of children and infants are recorded. It is excreted in the urine, partly in a potent form. In meningitis it does pass the blood-brain barrier.

Streptomycin today seems to be the mainstay in the treatment of tuberculosis, though it is a matter of opinion as to which type responds well and which best. The meningeal, acute miliary and ulcerative laryngobronchial types are said to respond satisfactorily. Tuberculosis of

the alimentary tract also responds, though peritonitis and lymphadenitis don't seem to. But inadequate treatment frequently produced resistant strains. How to circumvent this resistance is the subject of study in many laboratories and clinics.

Streptomycin treatment of tuberculosis has also revealed the potentialities of the agent for mischief, as the use of penicillin for syphilis has revealed the unwanted action of the earlier antibiotic. People handling streptomycin frequently experience a variety of dermatitis, a popular rash of an erythematous nature, specially round the eyes and elbows. These symptoms are often delayed, sometimes after six months of exposure. All such patients show a positive skin test.

Vestibular damage, vertigo, deafness, tinnitus seem to be the most constant toxic manifestation of streptomycin. About 95 per cent of cases of tuberculosis treated with streptomycin with 2 gram doses daily, for about three months showed these symptoms. An aside here. Out of evil cometh good it is said. This very vestibular neurotoxic action is being put to therapeutic use. Many cases of vertigo following Menier's disease, unanswerable to ordinary treatment are being cured by 0.5 g. of streptomycin every three hours. Streptomycin here acts as though a bilateral nerve section has been made.

Occasionally blurring of vision and generalised dermatitis were also noticed.

Dihydrostreptomycin, a recent derivative of streptomycin is said to be free from the aforesaid side actions of streptomycin. In reality this new compound also shows these toxic actions, perhaps with bigger dose and after a more protracted course. Dihydrostreptomycin is prepared by catalytic hydrogenation of streptomycin. It differs from streptomycin in having a hydroxyl in place of a carbonyl group in the streptosamine portion of the molecule. The unfavourable attribute of this brand is irritation at the sight of injection though some patients seem to prefer this. Intrathecal route is banned for this brand as the irritation is definitely more by this route than with streptomycin. It is therefore administered only by the intramuscular route. Patients who showed intolerance to streptomycin were comparatively safe with dihydro brand. Dihydrostreptomycin is also said to be slow of excretion.

Unfortunately development of resistant tuberculosis organism is just as frequent here as with plain streptomycin. Cross tolerance or resistance due to one continuing with the other is also noticed. The course of treatment usually consists of half to one gram twice a day for 75 to 120

days. Onset of head-ache, skin reaction, parasthesia of face, threat of deafness or renal irritation should serve as warning signs for discontinuance of dihydrostreptomycin.

Streptomycin in other conditions.—Tuberculosis of bones and joints, sinus involvement also respond to streptomycin. Here the results are noticed in a fortnight or a month.

The two recent chemotherapeutic agents sulpha drugs and antibiotics promise to vanquish all the venereal diseases. Streptomycin in doses of 2-4 grams daily for 4 or 5 days start the healing process in granuloma venereum; at the end of a fortnight, the healing process is almost completed. Observations for over a year showed no recurrence.

Another observation of interest is that a single dose of 0.2 to 0.5 gram of streptomycin controls gonorrhoeal infection without masking any subjacent treponema infections.

(Yet another aside observation. A "dangerous prophylaxis against gonorrhoea has been suggested in some defence services quarters. A single tablet of 100,000 to 250,000 units of penicillin taken within two hours of exposure, appreciably reduced gonorrhoeal infection in soldiers on 'liberties' or sailors on shore leave. But as this may mask the subjacent spirochaetal affection the substitution of streptomycin may be thought of).

In long standing urinary infections when multiple organisms are suspected, streptomycin is deemed superior to many other drugs.

In brucellosis, streptomycin synergises sulphadiazine, but this may be unnecessary when better results with aureomycin and chloromycetin are obtained. But if streptomycin alone is available 3 grams of it in three divided doses with about two grams of sulphadiazine with each dose may give satisfactory results.

Streptomycin has also some action on pertussis.

The over-all estimate of streptomycin reveals that unless the toxicity is counteracted, in special the vestibular damage, its prestige will be seriously undermined.

A novel finding.—Before leaving streptomycin, a fact of considerable interest that has lately come to light, deserves mention. Fluids in which certain micro-organisms grow, in particular streptomyces griseus (to be referred later) yield a precious by-product which is now thought to be identical with vitamin B 12 or 'Cobione' as it is christened lately. This

is a finding of great value as vitamin B 12 today is manufactured at considerable 'loss of life'. To obtain one gram of vitamin B 12, no less than four tons of liver of animals is needed.

Chloromycetin.—At least five antibiotics have been isolated from various species of streptomycetes; streptomycin itself (originally from an actinomycetes) and the discarded streptothrycin being second. The others are Chloromycetin, Aureomycin and Grisein.

Chloromycetin from *Streptomyces Venezeula* is now being synthesised. Its complex chemical structure would but interest the Chemist. This means that the term 'Antibiotic' signifying today naturally occurring chemotherapeutic agent from moulds, spores, soil organisms fungus etc., will have to be dropped or conferred new connotation. Chloramphenicol, the synthetic product has essentially identical properties as the natural chloromycetin.

Chloromycetin was hailed first as a specific for scrub typhus. Oral administration and greater stability are two distinct advantages with this antibiotic. Parenteral route causes irritation.

Dosage varies with diseases. Roughly three to six grams a day divided for six hourly administration followed by half the amount on subsequent days meet the demand, in typhus, while a longer subsequent medication is necessary for typhoid.

Chloromycetin is most effective in Rickettsial affections and against virus of psittacosis, lymphogranuloma venereum and atypical pneumonia. We are more interested in its claim for typhoid and preliminary reports in some cases are favourable while others do not give unequivocal evidence of benefit. Equally interesting data are being collected with reference to cholera. Mice infected with cholera vibrio are said to be saved by administering chloramphenicol. The results were superior to treatment with sulpha drugs. One here has to bear in mind that human Asiatic cholera is not identical with reference to symptoms, to animals inoculated with cholera vibrio. Vomiting of human cholera may make the oral administration impracticable.

The use of chloromycetin or chloramphenicol in diseases like psittacosis and lymphogranuloma has opened fresh prospects. Primary atypical non-bacterial pneumonia or virus pneumonia has only been recognised during the past fifteen years. Sulpha compounds, penicillin and streptomycin were found ineffective. At one time, in United Kingdom this was claiming a high mortality. Chloromycetin seems to control this form of pneumonia. In doses of 100-250 mgm. by mouth every hour for two to three days, followed by two hourly doses for subsequent two days

brought down fever, cough and other symptoms of toxæmia. The general impression was that physical signs and radiological appearances improved more rapidly than would normally be expected. Aureomycin (to be referred later) was superior to chloromycetin in this condition.

Aureomycin.—This new antibiotic from *streptomyces aureofaciens* is hailed today as the antibiotic of the widest range, sometimes called 'Versatile genius' among antibiotics. Early accounts of aureomycin were not encouraging, as it was found to be very unstable in culture media, less active in neutral or acid media, and serum reduced its potency. But strange, the 'in vitro' experiments that sounded a pessimistic note were not borne out by 'in vivo' happenings. This means that aureomycin is a true chemotherapeutic agent, activated within the body.

In addition to its wide range, it presents minimum difficulty for administration. Aureomycin is a crystalline salt, easily absorbed in the gut, though one occasionally notices gastro-intestinal irritation, of a mild type. A dose of 250 mgm. could be given every two hours in severe cases of toxæmia. A single oral dose of 1 gram produced maximum concentration in 5-6 hours while it is said that oral chloromycetin gave an earlier concentration. But aureomycin is excreted more slowly than any other antibiotic so far. The C. S. F. concentration was about 25 per cent of blood concentration. It could also pass the placental barrier. Though excretion starts rapidly in the urine, it may continue for two days after a single dose.

Fortunately there is no cross resistance between aureomycin and streptomycin or polymyxin and bacitracin, resistant organisms.

Aureomycin is also active against numerous Gram positive and negative organisms. Clinically the following conditions are benefited by aureomycin.

1. It is specific for every form of pneumonia-bacterial, coccal, viral and 'unknown'. Aureomycin permits treatment on clinical diagnosis alone as it can justifiably be given on diagnosis of pneumonia without waiting for or undertaking a bacteriological corroboration.
2. Aureomycin yields very satisfactory results in psittacosis and lymphogranuloma.
3. In typhus-epidemic, murine and scrub, aureomycin gives good result. It runs neck to neck with chloromycetin in therapeutic potency in the above conditions. Other rickettsias like rocky mountain spotted fever and Q fever also respond in a satisfactory manner.

4. Aureomycin controls brucellosis very well and some deem it superior to chloromycetin.

5. In typhoid, salmonella infections and cholera, aureomycin has not established its utility. In typhoid, most prefer chloromycetin to aureomycin.

6. It looks as though a master key for the 'venereal lock' has been fashioned in aureomycin. All the five venereal diseases are favourably influenced though the claim to cure syphilis will take a long time. Urethritis, specific or otherwise are corrected by aureomycin. Some deem this to be inferior to penicillin for gonorrhoea. Lymphogranuloma and granuloma venereum yield to this new antibiotic. It is being studied if it is superior to streptomycin in the treatment of granuloma venereum. Chancroid gives a good response. Strange to say that even the redoubtable treponema pallida quivers before aureomycin. It is presumed that other spirochaetal diseases like relapsing fever and Weil's disease, respond better, it is claimed by the manufacturers that weight for weight, aureomycin is more effective than penicillin in these infections as borne out by preliminary laboratory studies.

7. Organisms causing meningitis are also favourably influenced by aureomycin.

8. There is also some evidence of aureomycin having favourable effects on tuberculosis organism.

9. Penicillin resistant staphylococci respond very well to aureomycin. Mayo Clinic has reported that all the 34 penicillin resistant strains of staphylococci and 14 to streptomycin are sensitive to aureomycin. It is said that in any staphylococcal infection, aureomycin should be the choice from the very outset, pending determination of resistance or sensitivity to penicillin.

10. Barring proteus and Ps pyocyaneus, aureomycin is useful in all infections of the urinary tract.

11. Aureomycin is a valuable addition to the armamentarium of the ophthalmic surgeon.

12. Emerging out of the realm of bacteriae, virus and rickettsias aureomycin has a lethal action of protozoa like amoeba. Both the vegetative and the cystic forms of entamoeba histolytica respond to aureomycin treatment.

Who knows we may hear next of its use in malaria.

An over all survey seems to point out that aureomycin, has a very extensive range of action, shows low toxicity, permits oral administration (though occasionally intravenously it could be administered despite the tendency for thrombophlebitis of the vein) does not lead to resistant organisms, which attributes confer a unique place to it.

The editor of the British Medical Journal concludes in an editorial on the subject ".....the task of those who have to decide how many precious dollars to spend on this new antibiotic.....can be no easy one". (B. M. J. Aug. 27-1949 p. 477).

Other Antibiotics.—1. *Grisein*.—This is from streptomyces griseus and is of use in preventing streptomycin resistance. This promises to be of use in some coliform infections. The culture fluid is said to yield a substance resembling vitamin B-12.

2. *Polymyxin and aerosporin*.—These two are closely related antibiotics and have some activity against Gram negative organisms, like shigella, salmonella group etc. Bacillus polymyxin is a soil organism while aerosporin is from an aerobic bacillus called 'Bacillus aerosporin Green'. Chemically the two seem to be polypeptide yielding on hydrolysis recognised amino acids like leucine, threonine and serine. Much more spadework has to be done before putting these to therapeutic use. Aerosporin seems to be effective against pertussis.

3. *Bacitracin*.—This is from a Gram positive, spore forming aerobic organism. This antibiotic seems to be active against many strains of staphylococci resistant to penicillin. It could be used topically as blood, serum and pus do not reduce its potency. Organisms that produce penicillinase do not upset the activity of bacitracin.

4. *Nicin*.—This antibiotic produced by strep' lactis has bactericidal properties in vitro and vivo. Its toxicity however seems to depend on the channel of administration. Local reactions are noticed on repeated subcutaneous injections but intramuscularly it is comparatively painless. Nisin seems to synergise streptomycin when used in tuberculosis and in a complimentary manner nisin resistant tubercle organisms being susceptible streptomycin and vice versa. The dose is 20 to 30 mgm. per kilo intramuscularly.

The mycobacterium tubercle is yielding to ever increasing pressure of chemotherapy and the fall of 'this wall of Jericho' is the fond hope of

medical men. Greater progress has been made in the treatment of tuberculosis by chemotherapeutic agents during the last ten years than during the past 100 years.

5. *Neomycin*:—Attempt to get a substitute for streptomycin without its two unfortunate attributes is toxicity and ease of producing resistant organisms has brought this new antibiotic to light. Neomycin is produced by a different species of streptomyces, yet another soil fungus. Neomycin is basic, thermostable and soluble in water. It has not so far been manufactured in the purified crystalline form. Data available so far suggest that neomycin is about as active an agent against streptomycin resistant as to streptomycin sensitive organisms.

And that is the story of Antibiotics age 10.

Regeneration of Tissues with Special Reference to Repair

BY

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Whenever tissues are injured, whether cut, torn, burned or infected by micro-organisms, a series of tissue reactions follow at the site of injury. Their purpose is to destroy or limit the spread of the injurious agent, and to repair or replace the damaged tissues. In this article a brief description of how the damaged tissue is restored is considered. When the new cells are similar to those they replace, it is known as *regeneration*, while *repair* is a more comprehensive term that includes replacement either by cells and tissues of the same kind as those lost, or of a different, often simpler in kind.

Types of wound Healing.—Repair is said to be *primary* where the wound is aseptic and the edges are in apposition; *secondary*, if the wound gapes or is infected.

Stages of wound closure—Time factor.—Carrel and Hartmann¹ have carefully studied the rate of closure of skin wounds and some of the landmarks in the healing of the wound are (1) a *latent period* lasting from one to seven days during which haemostasis and granulation tissue occurs, (2) a *period of contraction*, when the edges of the wound are pulled together most probably due to shrinkage of granulation tissue. The rate of contraction is proportional to the size of the wound, rapid at first, but decreases in rate as the edges of the wound get closer, and lastly (3) *epidermization*, when the epidermis spreads over the granulation tissue after complete contraction has taken place. When contraction ceases, if the edges of the wound are more than 20 to 25 mm. apart, epidermization may cease entirely. From this it is evident that extensive loss of epithelium requires skin grafting for complete epidermization.

Factors concerned in the Healing of Wounds.—Cell division and cell migration are the essential changes in the repair of a wound. The nature of the stimulus that influences this change is completely understood. Of the very many theories, the mechanical and chemical stimuli deserve consideration. (1) *Mechanical*. According to Ribbert, when cells are destroyed, there is a release of tissue tension which stimulates the surrounding cells to migrate and to multiply. (2) *Chemical*. Here again the exact nature of the stimulus is not known. According to Carrel, the

repair is stimulated by proteins or their derivatives released from injured cells *necro-hormones*. That the products of injury not only help in the repair of the wound but also accelerate closure of the wound was recently confirmed by experiments on rabbit by Nettleship.² When a portion of skin is removed from the rabbit's ear, it takes about 12 to 14 days for the wound to close. If an extract of skin is injected into the margin of the wound, the time of healing is reduced to 7 or 8 days. According to Hammett and Reimann,³ growth-promoting substances must include sulphhydryl group, which is essential for mitosis.

Factors Influencing rate of Healing.—(1) *Age*. Carrel⁴ has shown that the rate of healing is faster in the young than in the old. Today it is even possible to predict the course and termination of healing under standard conditions, given the age of the patient and the size of his wound. (2) *Mechanical pressure* (Twyaman). Pressure as that of bandage, restrains the growth of connective tissue and accelerates the proliferation of epithelial cells. (3) *Temperature*. For rise of 10°C. healing rate increases twofold. (4) *Diet*. Inadequate amounts of proteins retard healing. Carbohydrates are very favourable but not fat. (5) *Vitamins*. Vitamin C plays a very important role in the repair of mesenchyme. In its absence, collagen atrophies (Hojar) and fresh reticulin and collagen are not formed (Wolbach).⁵ Due to lack of collagen, wounds show less tensile strength. In a wound, recovery of tensile strength is noted after a lag period of 4 days, and it is fully restored after 10 to 14 days. This was studied in experimental animals by incising the stomach and allowing repair to proceed. The animals were killed at definite intervals and the air pressure necessary to tear the wound determined. Vitamin D deficiency interferes with healing of bones. Osteoid tissue is formed in excess which fails to get calcified. (6) *Hormones*. Insulin, extracts of testis, ovary, thyroid and adrenal stimulate the growth of tissues.

Variation in the Ability of Different Kinds of Cells and Tissues to Regenerate.—There is great variation in the ability of different kinds of cells and tissues to regenerate. Supporting tissues such as connective tissue (collagenous, reticular and elastic), bone, cartilage and fat regenerate well. New blood vessels are rapidly formed from the endothelium of surviving capillaries. Both epidermal epithelium and the glandular epithelium (gastro-intestinal tract, liver etc.) also regenerate well. Regeneration is poor with smooth muscle (intestine, uterus etc.); but skeletal muscle fibres are able to regenerate lost sarcoplasm but not muscle cells. In the case of cardiac muscle, there is no convincing evidence of its regeneration. Nerve cells, whether in the central nervous system or in ganglia elsewhere, never regenerate to replace lost cells. Nerve fibres on the other hand can regrow provided the nerve cells are in tact.

Regeneration of Fibrous Tissue and Tendon.—Fibrocytes are formed by the growth promoting factors from cells already present in connective tissue. They move in straight lines with a speed of 8 microns per hour (0.2 mm. in a day) and fuse with cells coming from opposite direction. Finally they get separated from the ensheathing fibrils, shrink and lie dormant until stimulated to renewed activity. In the tendon, the connective tissue is arranged parallel to the line of tension and if a silk thread is placed in space between cut ends and transverse pull is applied, then an artificial tendon is formed at right angles, since connective tissue cells when pulled, get arranged parallel to the line of tension.

Regeneration of Bone and Cartilage.—Mechanical factors play an important part in the architecture of normal bone. Special architecture develops in fractures and ankylosed bone corresponding to the lines of pressure and tension. Perichondrium and periosteum form cartilage under pressure *in vitro* or *in vivo*. Thickness and closeness of spacing of trabeculae vary directly with the intensity of stresses submitted by them. If there is a gap in the fracture, union usually takes place with more or less shortening. The gap is bridged in the most economical manner that the altered position will allow. When stresses in the bone exceed strength of bone, distortion occurs until equilibrium of these forces is attained. Division of cartilage cells decreases with maturity. Apposition of articular surfaces is necessary for integrity of joints and proliferation of cartilage becomes more marked in weight-bearing than in passive areas. Healing is limited in fractures of the cartilage and union of the fractured fragments is by fibrous tissue.

Regeneration of Epithelium-Skin.—Epidermis and corium are restored completely but sweat and sebaceous glands are not formed. Epithelium of the skin migrates as sheet of cells. The epithelial cells require a substratum of mesenchyme for migration. When the mesenchyme is disrupted as in deep wounds, epithelium fails to migrate until a new mesenchymal substrata is built. Epithelium spreads beneath the scab over the newly formed mesenchyme. The scab which hitherto acted as provisional covering drops off.

REFERENCES

1. Carrel: J. A. M. A., 82, 255, 1924.
2. Nettleship, A.: Am. J. Clin. Path., 13; 349, 1943.
3. Hammett, F. S., and Reimann, S. P.: J. Exper. Med. 50: 445: 1929 (Cell proliferation response to sulphhydryl.)
4. Carrel and Ebeling: J. Exper. Med., 44, 285, 1926.
5. Wolbach, S. B., and Howe, P. R.: J. Exper. Med. 42: 753, 1925.

The Value of Nicotinic Acid in Leprosy

BY

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(COMMUNICATED BY Dr. A. A. AYER.)

For a few years I have been trying to find out a method by which active hyperaemia can be induced in the skin lesions in Leprosy as I felt that by the resultant phagocytic effect there would be a resolution of the lesions. With this end in view I first tried cupping with suction cups but I found this a tedious process. Then I tried mustard (white and brown) poultices and met with the same difficulty. I thought of vapour bath, at least an improvised one, but that was beyond my means. A few months back I found that Nicotinic acid had a pronounced vasodilatation action on Leprosy lesions and so I gave a trial to it. After a long trial I have found it useful in Leprosy. I tried Priscol (Ciba) also as I was informed that it can produce vasodilator action, but the desired hyperaemic effect could not be obtained. Nicotinamide also failed to produce the desired effect.

I would like to give a short account of Nicotinic acid before discussing its value in Leprosy. This B. Complex vitamin has growth stimulating properties and is the essential growth factor for a number of organisms. It is called Niacin in U.S.A. lest the people confuse it with Nicotin. It is the one of the most thermo-stable components of Vitamin B. Complex, and one of the most stable of vitamins, not being oxidised or destroyed by cooking. It occurs in all living cells as the amide, liver containing it most; adrenals, kidney, yeast, whole grain foods, mushrooms and pea-nuts are the best sources.

Not only Aneurine hydrochloride and Riboflavin, but Nicotinic acid also is synthesised by the bacterial flora in the intestines of man. This synthesis can be inhibited by the bacteriostatic action of the sulpha and sulphone drugs. The amount synthesised by the intestinal flora may be as much as 80% of the daily consumption. Therefore the confusional symptoms following sulpha drugs may be due to the conditioned nicotinic acid deficiency.

Pharmacology.—It is obtained as white crystals or white crystalline powder; is odourless, has faintly acidic taste; soluble in 75 parts of water, readily soluble in boiling water and in alkaline solutions. Its dose is 3/4 to 1½ grs. or 50 to 100 milligrams.

It possesses a pronounced vaso-dilatation, action, peripheral dilatation, the action being arteriolar. No change in the body temperature or in the metabolic rate has been observed and so it is not compensatory to heat production. The flushing, the itching and the increased motility of the stomach are similar to those produced by histamine, and so it may be favouring the release of histamine. Nicotinic acid is present in foodstuffs as a co-enzyme. The greater part of the nicotinic acid is in the blood corpuscles.

Therapy of Nicotinic Acid.—This drug is given for its vaso-dilatation action, e.g., in coronary disease, asthma and peripheral vascular disease. It is useful in tropical sprue. Typhoid often precipitates deficiency symptoms, i.e., the mental symptoms of Nicotinic acid deficiency—confusion, delirium, melancholia. I am informed that electrocardiogram in cases of Typhoid show nicotinic acid deficiency and that nicotinic acid is one of the drugs given in Typhoid. It is believed that the substance in liver extract which controls intestinal absorption is nicotinic acid.

Nicotinic Acid and Leprosy.—With a view to induce active hyperaemia I used it in Leprosy. At first I gave 50 mgms. subcutaneously. The patient experienced very distressing symptoms: chiefly flushing of the face and a very hot feeling in the face which caused one patient to faint. Consequently I reduced the dose to 25 mgms. which was well tolerated by most patients. They also experienced the same flushing, hot feeling in the face, pain in the epigastric region which was relieved by taking cold water, intense itching all over the body; a few cases complained of a burning sensation over the tongue as well as dryness; some lepromatous cases had cough. These symptoms lasted for about 5 minutes, coming on within 5 minutes of the injection. In a couple of cases the patients felt a hot feeling in the epigastric region at first, which extended upwards to the chest causing much discomfort and later it extended to the face and then suddenly left them. In another case in the Leprosy Ward of Stanley Hospital, the rise of pain from below upwards was so acutely felt that on one occasion it resulted in convulsions lasting for about five minutes. When the injection was given on empty stomach the reactions were very severe. Oral administration before meals caused mild symptoms and after meals none at all. Nicotinamide caused none of these symptoms even when given subcutaneously.

The lesions in Leprosy reacted very well when this drug was administered subcutaneously, and mildly when given orally, the different types reacting differently. Minor tuberculoids became more raised and erythematous at the periphery, the redness sometimes extending beyond the margin. Major tuberculoids became red throughout and had the feeling of plaques; the early non-anaesthetic hypopigmented bacteriologically negative patches became reddened throughout, so also the

maculo-lepromatous bacteriologically positive lesions. Diffuse lepromatous cases showed reddened areas all over the body, particularly over chest and back; the anaesthetic areas and central portions of neuromacular lesions did not react; so also the incipient and macular lesions which were intradermally. Reaction of the lesions to nicotinic acid show that these lesions are active. Usually the clinical picture does not reveal the histological picture. For example, tuberculoid foci often show moderate amount of round cell infiltration more than usual for such lesions, suggesting activity, while the appearance of the tuberculoid foci do not. So it is evident that nicotinic acid will show the amount of round cell infiltration.

Its Value in Leprosy

1. **Useful in Differential Diagnosis.**—I have tried it on cases of Tinea, birth-mark and leucoderma: in none of these was there any tissue reaction or any other sign of activity. But similar looking hypopigmented macules of leprosy (early incipient lesions) reacted as stated before, showing that there is round cell infiltration. The histology of these macules show a large number of round cells, diffusely distributed in the papillary layer and a little below it. Therefore the injection of nicotinic acid will enable us to differentiate the early indefinite macules of Leprosy from other similar looking macules. I have already mentioned that the anaesthetic macules do not react, but the fact that they have anaesthesia is sufficient evidence that they are lesions of Leprosy.

2. It is useful to differentiate the different types of macular Leprosy. The lesions in leprosy react differently according to the amount of round cell infiltration: the periphery or the whole macule becoming erythematous. Judging from the reactions already mentioned previously one can note the degree of activity in the macular lesions and thus the incipient, the tuberculoid and other neuromaculars, and the lepromaculars can be classified. In diffuse lepromatous leprosy one would observe patchy ill-defined erythematous areas, particularly over the chest and back when nicotinic acid is injected subcutaneously. In the other lepromatous types and in the neuroanaesthetic types the lesions are so very obvious that no test is required to classify them.

3. Books on Pharmacology state that Nicotinic acid is useful in preventing metallic poisoning, acting like liver extract and sodium thiosulphate. Nicotinic acid being cheaper and easy of administration, it would be useful to prevent the accumulative effect when metals are used as adjuvants in the treatment of Leprosy. It is not unlikely that the drugs used along with it are more quickly circulated in the system, owing to its quick vaso-dilatation action.

4. I have recently been trying injections of Sulphetrone. Though the cases I tried have not been many owing to limited supply of this drug, I would like to state my observations. Those who have been using these chemo-therapeutic drugs have not infrequently observed certain complications such as anaemia, agranulocytosis, etc., resulting from the administration of these drugs. In my experience except for the pain of the injections which is generally felt at the time of the injection and is generally relieved by adding 1% Percaïne and by injecting very slowly, and fever reactions in a few cases which passed off in two days time, there has been no other complication. This is probably due to the fact that I add nicotinic acid to the aqueous solution of sulphetrone. It has already been stated that chemo-therapeutic drugs inhibit the synthesis of nicotinic acid in the gut and it is also a fact that these drugs tend to cause hamolysis and anaemia and a fall in the polymorphs. If it is accepted that there is some relation between nicotinic acid and the prevention of haemolysis, then the administration of nicotinic acid with chemo-therapeutic drugs is a necessity, to prevent hemolysis, anaemia and agranulocytosis.

5. In addition to its effect on the round cells, I am inclined to think that by the phagocytosis that follows active hyperaemia, this drug would prove of much value as an auxiliary medication in the treatment of Leprosy. Many a drug much advocated for Leprosy, influences the disease mostly by causing mere clinical improvement, while the stimuli or bacilli take a long time to be got rid of; in other words, the action of such a drug is that of producing a response of the activated tissues to it and not one of response of the stimuli or the bacilli to it. I feel that by vaso-dilatation and increased emigration of the blood corpuscles into the tissues, we are attacking the bacilli, without causing any breakdown of the defensive mechanism, and this would automatically result in a subsidence of the activated tissue.

6. Nicotinic acid may prove to be helpful as a prognostic test. I have found that lesions which have been intradermally do not react to this drug which probably means that the lesions have been rendered inactive. Some cases which had been on subcutaneous injection only and which have shown marked clinical improvement, did not react to the same extent as they did before treatment. This seems to show that as the amount of round cell infiltration decreases, the reaction of the macular lesions to nicotinic acid also decreases. Hence this drug is useful in gauging the degree of activity of the macular lesions, and can prove to be an aid in prognosis.

I wrote to Dr. Muir about the vaso-dilator effect of this drug and its value in Leprosy. He replied that the same active hyperaemic effect can be obtained by active exercise. While admitting it is so, I would

add that in the administration of nicotinic acid there is no increase in the basal metabolic rate, whereas by exercise it can be increased by as much as 300%. In this connection I would like to state that exercise is strongly recommended in Leprosy to increase the resistance by promoting phagocytosis; the same effect can be obtained in a simpler way by nicotinic acid. Moreover, the pathogenicity of the Leprosy organisms being very low, this method of increasing the defensive mechanism of the system to overcome the stimulus, seems to me to be a rational method and so it will be very useful as an aid in the treatment of Leprosy.

The following is an abstract from an article by V. Chorine in Fontilles (1947) 649. "Action de l'amide nicotinique sur les bacilles du genre *Mycobacterium*." (Nicotinamide action on the bacilli of the genus *Mycobacterium*).

"The experimental study of the effects of nicotinamide led the author to the following conclusions: (1) Nicotinamide in massive doses has an evident cumulative property in rat leprosy and tuberculosis of the guinea pigs, the effect being more evident than those obtained by experimental drugs. (2) This curative property of the substance is not due to its vitamin activity. (3) Its effect seems to be specific for bacilli of the genus *mycobacterium*. This new property of the substance permits the assumption that it may be one of those new therapeutic series with activity against leprosy and tuberculosis—a series which contains others endowed with still greater activity".

Probably if he had tried nicotinic acid, he would have been of the same opinion as myself regarding the value of this drug in Leprosy. We have been off and on taking the differential count of all the cases under sulphetrone and the total count in a few cases. Despite the weekly dose of 10 ccs. of a 25% aqueous solution of sulphetrone, the percentage of polymorphs has usually been between 55 and 60, the total count normal and no case showed evidence of anaemia. Therefore the haemolysis and agranulocytosis not infrequently met with by using the sulphone drugs, can be prevented by the co-administration of nicotinic acid.

7. If it is conceded that the bilateral tenderness of the median nerves is due to a factor in the intestines caused by the deficiency of nicotinic acid, and that activation of the disease is due to this factor, it follows that the administration of nicotinic acid will be helpful to prevent activation of the disease, thus arresting the progress of the disease.

Summing up

1. Nicotinic acid is useful in differential diagnosis, as only those diseases with round cell infiltration in the macules would respond to nicotinic acid.

2. It would be useful in differentiating the different types of Leprosy as the response varies with each type, depending upon the extent of round cell infiltration and its distribution in the deeper layers.

3. It is probably useful in preventing the accumulative action of metallic drugs, acting like sodium thiosulphate and liver extract. It probably also aids in better absorption of any drug when given along with it, as it ensures quick circulation of it in the system to the required parts.

4. It seems to be of value in preventing the haemolytic anaemia which not infrequently follows the oral administration of sulpha and sulphone drugs, permitting oral administration for a long period with impunity.

5. It would prove to be a valuable auxiliary drug in Leprosy as it promotes diapedesis and phagocytosis, thus helping the defensive mechanism of the human system.

6. It probably prevents activation of a disease thus arresting its progress.

7. It may be useful as a prognostic test.

Leprosy being a disease of low pathogenicity, it does not seem to be a rational method to use powerful lepromolytes such as potassium iodide and the sulphones which are likely to break down the natural defensive mechanism. The same effect has been noted when a lepromatous case with obvious lesions is attacked by small-pox or any devitalising fever, when these lesions subside to a great extent but re-appear when his normal health is restored.

Therefore I would suggest that leprologists give an extensive trial to nicotinic acid, preferably parenterally, especially in lepromatous cases, along with other drugs.

REFERENCES

BICKNELL, F. and PRESCOTT, F. *The Vitamins in Medicine*, 2nd Ed. London 1946.

Fevers of Long Duration*

BY

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When a doctor is called in to see a case with fever, it is extremely difficult on the first or second day or even for that matter at the end of the week to say how long the fever is going to last. The near relations of the patient and the patient himself always ask the question, "Dr. What is the fever due to? and when is the fever likely to settle down?" To answer this question correctly, one must know the cause of the fever. When the doctor is called in to see a fever case, if physical examination shows lack of positive physical findings, he almost always thinks of influenzal fever. In the majority of cases he is bound to be right. But in a small percentage of cases he goes wrong. In a case of influenza, the temperature should settle down to normal and run normal anywhere from the fourth day to the seventh day. If seven days are over and there is no sign of the fever settling down to normal, the diagnosis of influenza is no longer tenable. It is time the case is considered as non-influenzal and investigated. This evening when we want to consider fevers of long duration, I propose to include only those conditions in which the fever has lasted for more than a week or ten days. The common conditions that are usually thought of are, in the order of their importance, typhoid fever, pulmonary tuberculosis and bacterial endocarditis.

Regarding typhoid fever, though the typical cases do not offer any difficulty in their diagnosis, some of the atypical cases are extremely difficult to diagnose. The clinical picture is so varied, that sometimes, even expert clinicians are thrown off guard. For example, I was called in a few days ago to see a patient suffering from fever of ten days duration. The history of the case was: A young man of 25 or 26 years had a slight swelling of the scrotum which was bandaged with Ithylol Glycerine and simple salicylate mixture was given. Finding the temperature showing a tendency to go up, the doctor in attendance thought it may be filarial orchitis and put the patient on sulphadiazine tablets. Two or three days after, the patient began to complain of pains in a number of joints both large and small. By this time about 7 days were over and thinking of the possibility of rheumatic infection, the patient was put on Soda Salicylas 20 gr. every two hours for two days. Even at the end of this, there was

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no relief whatsoever. It was at this stage that I was called in. At the time I saw the patient, he was drowsy, having muttering delirium but could recognise any object which was shown to him or recognise relations with difficulty. I thought it may be infective arthritis and advised massive dose of penicillin intramuscularly and sulphadiazine orally. In 24 hours' time, his general condition deteriorated considerably and the temperature which was ranging between 103 and 104, had now shot to 105. A careful examination did not reveal any enlargement of spleen or liver and since penicillin and sulpha drugs had failed to control the joint pains and since there was certain amount of tumidity of the abdomen, I suggested the possibility of enteric fever. Widal was done and it was found to be 1 in 200 positive for B. Typhosus. Within the next 24 hours the man took a sudden turn for the worse and died. This case will illustrate the difficulty of recognising typhoid fever when it presents in an atypical fashion. The difficulty is greater with regard to the ambulant cases which come under the observation for complication. In these cases both typhoid and the complication will be missed or as very often happens, the complication is misinterpreted. For example, a case of perforation may be diagnosed as an acute appendix. Some years ago, one of my housemen admitted a case as P. U. O. in the ward. My chief thought it was a case of acute appendicitis and wanted the Surgeon to be informed. On cross-examining the patient, I found he was suffering from fever for nearly two weeks. Hence I told my chief the possibility of typhoid ulcer perforation. The abdomen was opened and it was found to be a case of perforation very near ileocaecal junction in the ileum. There were a few exudates in the peritoneal cavity. I have had similar experiences with three other cases, and hence my own conclusion is that when a man is under observation for fever of more than ten days' duration, and if he develops an acute abdomen, the possibility that the fever is typhoid in origin and the acute abdomen is secondary to perforation of the typhoid ulcer should always be thought of.

The most certain way of diagnosing typhoid fever is to take the laboratory help as early as possible. If the doctor sees the fever patient before the 7th to 10th day, it is worthwhile having blood culture done for B. typhosus. But if the case is seen for the first time after a fortnight, blood culture is not likely to be positive. In fevers which have lasted for a fortnight or more Widal is positive; so also culture of urine and motion. Though this is the usually accepted teaching, I have had several cases in which blood culture yielded positive results even as late as 20 days after the onset of fever. In my experience, motion culture is not so dependable as urine culture for isolating organisms. Another feature which should be kept constantly in mind is some cases may not yield a positive report for quite a long time. Last year, for instance, I had a patient under my care with a history of fever starting with rigor, pain in the loin area and a vague discomfort in the abdomen. The fever had

* Address delivered at the Coimbatore District Medical Association on the occasion of their Silver Jubilee Celebrations.

lasted for six days when I was called in. I thought it might be Pyelitis, particularly in view of the history of rigor and pain in the lumbar region. His widal and culture reports were negative even on repeated examinations, thrice by three separate laboratories. Since the response to sulphonamides was poor, he was treated as enteric fever on clinical grounds. Nearly four weeks after admission, he developed loose motions and these motions on culture showed typhoid bacillus. Though to start with, it looked as though the temperature was settling down, it did not show any sign of coming down even at the end of nearly 12 weeks. His lymphocyte count was very low, viz. 3500 per c.mm. and Polymorphs were particularly very low. In view of this fact, we thought he might be a case of Agranulocytosis, but the granular cells were only low and not absent. A very careful examination failed to reveal any cause for the persistent temperature. Then a consultant suggested that it might be a low lying tuberculosis which it was not possible to detect either by x-rays or by streptomycin. The patient had about 15 or 20 grammes of streptomycin without any benefit whatsoever. At this stage with a view to stimulate the leukocytes, Paryxodin injection was started and the leukocyte count showed a steady improvement; and as the leukocyte count went up, he complained of pain in the scrotum and examination at this stage showed an abscess scrotum. Pyaemic abscess formation in the course of typhoid fever is very common and whenever the temperature does not settle down in an established case of typhoid fever, this possibility should be looked for and if found, it should be drained. In this case, with the surgical drainage of the abscess, the temperature settled down to normal in 24 hours' time and did not recur.

While typhoid fever is easy to diagnose even when it is atypical, tuberculosis is very difficult to diagnose, particularly when it is a case of tuberculosis of the spine. Unless the attending physician has constantly this possibility in his mind, the disease is missed for quite a long time. I have had quite a number of cases in which the final diagnosis was tuberculosis of the spine in which the earlier stages the diagnosis was not even thought of. To recall only some of them: In one case it was a medical student who had fever for nearly four weeks. Every test proved to be negative and so in view of the fact that he had a palpable spleen, Kala-azar was thought of and Ureastibamine injections were given. After a number of injections, the temperature settled down and so it was diagnosed as clinical Kala-azar. The patient was discharged and he began to attend to his work. By this time, he qualified and one day while he was working, he complained of fairly severe pain in the back. On account of the severity of the pain, he was put under observation and he was found to be having low temperature in the evenings. A picture of the lumbar spine revealed caries of the spine in the first and second lumbar vertebrae. In the second case, again it was another medical

student. She was admitted for fever with palpable liver. In view of the palpable liver, her case was diagnosed as Hepatitis and emetine injections were given. There was some response, but as soon as the emetine was stopped, the temperature shot up. Then Pyelitis was thought of in view of the moderate leukocytosis with a few pus cells in the urine. Then sulphonamides were tried with no benefit. At this stage, because of the appearance of physical findings in the lungs suggestive of bronchopneumonic state on the right side, x-ray chest was done for the third time, when a small patch suggestive of an area of consolidation was visualised. This was thought to be a case of pulmonary tuberculosis and treatment was directed towards the lung lesion. As the patient was getting pneumothorax treatment, she began to complain of pain of girdle type in the umbilical region. She began to complain of a pulling sensation in the neck. In view of this, a spine picture was taken and that showed caries of the lower dorsal vertebrae. In one other case, the patient was brought to me at the end of 4 weeks fever with pain in the abdomen. All the examinations, both clinical and laboratory, did not give any positive findings. I thought it might be a case of tubercular abdomen, but because she complained of the pain being made worse by sudden movements in the bed, I had an x-ray of the spine done and it revealed evidence of early caries of the lower dorsal vertebrae. Thus the cases of spinal caries that are missed can be quoted in abundance. It is missed often because of the lack of physical findings in a good percentage of these cases till the late stages of the disease. Of course once the nervous symptoms occur, it is not likely to be missed.

The next common site that is very often missed is tuberculous adenitis of the hilar region so-called mediastinal tuberculosis. These cases again do not give any positive physical findings. Even on very careful examination, even after knowing by skiagram the presence of adenitis, I have found difficulty in arriving at the diagnosis by clinical means. But in these days where an x-ray chest is taken in all cases of fever, this condition is not left undiagnosed for long.

The third site which is missed is tuberculosis of the kidney. I can recall a case in which the patient was tossed between qualified medical men, quacks and venereal surgeons and which ultimately proved to be a case of renal tuberculosis. These cases while it is difficult to spot in the earlier stages, are quite easy once the disease is well established. In the early stages a trace of albuminuria with a few red blood cells and still fewer pus cells in the urine and the urine culture being repeatedly negative for bacillus coli should suggest the possibility of renal tuberculosis. As the disease advances, the bladder is affected and frequency of micturition occurs. Strangury also might occur. But this is a late stage and very little can be done for the patient once this stage is reached.

Then tuberculous meningitis is a condition which in the earlier stages may be rather difficult to detect. The possibility should occur to the mind when there is headache and swinging temperature itself reaching its zenith in the late afternoon or evenings. Occasionally daily rigor might occur. I had a case in which the patient was admitted with a history of fever with rigor every day. He also complained of severe headache. His temperature used to come down everyday with profuse sweating. In view of the rigor and headache, repeatedly blood smear was seen to eliminate malarial infection. Though parasites were not seen, he was given quinine injections for three or four days with absolutely no benefit. Since there was only moderate leukocytosis, we thought of cryptic infections, but this also was not found to be the case, and finally, lumbar puncture revealed findings which are in consonance with that of tubercular meningitis.

While tuberculous adenitis, when it occurs in the mediastinum may be spotted easily by x-rays or when it occurs in the neck by clinical means, tuberculous adenitis in the abdomen is not easy to spot in the earlier stages. The condition is not even suspected when the patient is not emaciated. But as the disease advances, progressive wasting occurs. Patient may even develop gastro-intestinal symptoms such as vomiting or diarrhoea or vague pains, pain in the abdomen which has no relationship with the food, showing that the trouble is outside the alimentary tract. This is particularly seen in children. The condition may be either adenitis or the mesenteric group of glands or a peritonitis. If it is adenitis, till the glands become matted together and form a lump, it is not easy to be sure of the diagnosis. The cases in which it is diagnosed earlier are cases in which laparotomy has been done, mistaking the condition for Peptic Ulcer. Tuberculous peritonitis should be thought of when fever occurs with irregular lumps in the abdomen, the lumps not suggestive of any intra-abdominal organ and ascitis occurs insidiously. There is general languor with occasional or continued fever which is not as a rule very high. There may be constipation or diarrhoea. The characteristic increase in the size of abdomen with wasting of the limbs is noted. The fluid contains 10 to 14 per cent proteins, lymphocytes and R.B.Cs. This is the ascitic type of tuberculous peritonitis. Even if the condition is missed at the onset, the onset of ascitis is bound to draw the attention of the clinician to the true nature of the condition. In contrast to this, with plastic type the abdomen is scaphoid and irregular lumps are felt. The omentum itself is rolled up and lies like a sausage either at the level of the umbilicus or a little above. I have seen these cases mistaken as an enlargement of the liver. This can easily be avoided by finding the edge reaching almost the left hypochondrium and band of resonance above the edge. These cases respond poorly to treatment. Occasionally tuberculous glands which are not very prominent low down at the neck or in the upper portion of the chest or axilla will

be the cause of continued fever. About a year ago, a nurse was admitted with irregular fever. She had enlargement of the liver and spleen and constant pain in the abdomen. I thought it might be due either to tuberculous peritonitis or caries of the spine with reference to pain in the abdomen. Repeatedly x-rays were taken and the spine was found to be normal. In view of the fact that she had enlargement of the liver and spleen, though the laboratory tests were not in favour of Kala-azar, she was given a course of Ureastibmine. As the injections were being given, the temperature settled down, but it created no impression on the enlargement of the liver or spleen and the temperature also suddenly started going up. She began to complain of pain in the lower part of the neck. At the site of the pain a discrete gland could be felt. A biopsy was done and that showed caseating tuberculous adenitis. An x-ray was taken in this case soon after and about 4 weeks later after the biopsy report of the gland was received. On both the occasions, the lung was found to be normal. With streptomycin and ultraviolet rays, she made complete recovery. In this case though tuberculosis was suspected, tuberculous adenitis was not thought of till one of the glands became acutely inflamed.

Thus tuberculosis in some portion of the body or other is an important cause for long continued fevers. Cases which are diagnosed as clinically typhoid too, often turned out to be either caries spine or tuberculous adenitis or tuberculous peritonitis, or miliary tuberculosis.

In practice, a condition which is often missed as a cause of long continued fever, but which is by no means rare, is *Bacillus Coli Pyelitis*. This is particularly missed in man. This condition should be thought of when rigor occurs daily and the fever is generally at its maximum by night between 8 and 10 and come to very nearly normal in the early morning hours. It may start insidiously and patients complain of a sort of chill feeling rather than the outspoken rigor. There are no physical findings and the urine must be carefully examined for evidence of pus cells. Occasionally pus cells may not be present in the urine in a case of *Pyelitis*. I have had my own cases in which the urine was found to be normal with no pus cells and yet on culture *B. coli* was shown. This should particularly be thought of in the older men when prostatic hypertrophy occurs, resulting in obstruction to the free flow of urine. Certain amount of urinary stasis occurs as it gets infected and causes fever. This condition should also be thought of when fever occurs during pregnancy and in female children. In children the remarkable feature is that the temperature may be very high and alarming. If the doctor has not seen the child during the night when he was sent for and if he calls at the residence the next morning, the child may be at the gate playing, making the doctor feel that much fuss has been made over a trivial illness. If specific remedies like sulphanilamides are not given and if the urine is not sufficiently alkalinised, the temperature will

promptly recur the following night as well. With the advent of sulphanilamides, Pyelitis is controlled even in the presence of obstruction to the urinary passages. But the peculiarity will be in the presence of an obstruction though the fever responds when sulphanilamides are being given. As soon as they are stopped, the fever will recur. I have seen one case in which a calculus was present behaving in this way and in another case the stricture of the ureter was responsible for this kind of behaviour.

The next important condition which is very often missed is Perinephric abscess. Patients are under observation for quite a long period. All the cases that I have seen have been under medical care for two to three months before the true nature had been found out. In one case a girl of 9 years was having irregular fever for about six weeks. Every test was found to be negative and it was found that she had a little tenderness in the right kidney region in the back. Solely on account of this and the leucocytosis, perinephric abscess was thought of. The consulting surgeon was not willing to incise in that region, but when he did incise reluctantly in this region about half a pint of pus escaped and the girl made an uneventful recovery. This condition is missed because of the lack of physical findings till the pus reaches the surface.

A few other conditions of long continued fevers are Bacterial endocarditis, Hodgkins disease, lymphosarcoma and actinomycosis. In bacterial endocarditis the cardiac murmur, the palpable spleen and infarcts in the various organs with the blood culture gives the diagnosis. In Hodgkin's disease or lymphosarcoma, gland biopsy is helpful. In actinomycosis, sinuses will occur sooner or later. The discharge from the sinuses or if a lump is seen aspirating from the lump, might yield material which will show the characteristic granules.

So far I have described conditions in which there were no physical findings or very little of them. I will just now describe a case in which even inspite of the physical findings, it took a long time to arrive at the final diagnosis.

A patient was under my care in 1940 for a mild attack of influenza. Even at that time he had a primary sore on the external genitalia. He was advised a course of anti-syphilitic treatment and the next time when I saw him was 8 years later. The patient presented himself for fever of over five months' duration. On clinical examination, he was found to have an enlarged liver, the enlargement being nearly three fingers' breadth below the costal margin. Examination of the chest was suggestive of consolidation right base. For these five months he has had sulpha drugs, emetine and some of the common antipyretics without much benefit. In view of my past knowledge, I thought it was a case Gumma of the Liver.

Wassermann reaction was done and the patient was put on iodides. Wassermann was reported as negative. I found his temperature showed a tendency to settle down though it did not completely maintain normal. I thought it may be secondary infection superadded or necrosis at the centre and asked a needle to be put in into the liver. By this a very small quantity of pus was aspirated. So I thought it may be a deep-seated abscess liver and surgical drainage might benefit the patient. On the advice of surgical interference, he left the hospital. But because of the recurrence of fever, he sought admission under a surgeon of the hospital. Soon after his admission, I was called in to discuss about the case and I informed my surgical colleague that it was very likely to be either an abscess liver or a necrosing gumma, though Wassermann reaction was negative. Under local anaesthesia, the liver was explored and about half a pint of thick pus was evacuated. When the patient was started on emetine the temperature showed a tendency to settle down, but even while the patient was on emetine, the temperature used to shoot up to 102 or 103. Since the drainage area was not healing, the surgeon sent a bit of the slough for sectioning and it revealed actinomycotic organisms. This proved the case to be one of actinomycosis of the liver. Now it is understandable why iodides benefited the patient. This patient was put on iodides, sulpha drugs and penicillin with complete recovery.

Two Rare Cases of Meningitis

CLINICAL NOTES

BY

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AND

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LABORATORY NOTES

BY

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CASE I.

Ward: Victoria. Bed No. 21. Name: Ganga Bai; Age: 23 yrs. Caste: Hindu. Address: C/o Krishna Sa, 10, Palani Andavar St., Chintadripet. Admitted on: 7-2-1950; Discharged: 22nd February 1950. Result: Expired at 11-30 P.M. Notes written by: Dr. T. N. Vijayalakshmi. Diagnosis: Cryptococcus Neoformans Meningitis? Complaint: Intense Headche and vomiting; Since One month.

Previous illness with dates Nil particular.

Habits (diet, alcohol, etc.) Vegetarian.

Family History: Nil particular.

History of present illness: Present complaint started a month back with intense headache. Has vomiting since fifteen days. Has unconsciousness sometimes for ten or fifteen minutes. Has been unable to walk since a month. Fever comes off and on. Appetite poor. Bowels regular. Micturition normal. Periods very irregular and scanty.

Laboratory reports

Urine.—Alk. Sp. gr. 1010. No Albumin—No sugar.

Blood.—WBC. 8000/c.m.m. D.C. P₄₅ L₅₂ E₂ M₁ Blood Picture
Normocytes.

Sputum.—A.F.B. not seen. { Sputum: Organisms conforming to the morphology of Cryptococcus Neoformans seen in smear and grown in culture. } No. M.P. seen.

Other reports.—12/2 L.P. done Fluid under very high tension. Fluid cloudy. { Blood for $\frac{K}{WR}$: neg.

Total Proteins — 90 mgms% X-Ray chest: Nil abnormal.

Blood culture — Globulin — +
sterile Chlorides — 700 mgms% X-Ray skull — No evidence of any tumour.

• Sugar — 21 mgms %
Cells — 500 yeast cells — budding forms seen.

Smear and Culture.—Organisms conforming to the Morphology of Cryptococcus Neoformans seen in smear and grown in culture.

Condition on admission.—Patient is a fairly well nourished individual of about 23 years. Development in general—not enough for her age. Has got squint both eyes. Lower half of the body not proportionate to the upper half. Both Breasts are ill-developed. Public hair absent. Pescavus present both feet. Tongue coated and moist. Teeth dirty. Gums unhealthy and bleeding easily. Skin and hair healthy. No evidence of any fungus infection in the skin. Decubitus—Nil abnormal. Kernigs sign—Negative—No neck rigidity.

C. N. system.—Intelligence memory etc.—below par

Speech—Dysarthria present.

Cranial nerves: Normal vision is defective.

Motor system—Power.—Poor in all the four extremities.

Co-ordination.—Normal in the upper limbs but impaired in the lower limbs.

Wasting.—Nil.

Abnormal movements.—Nil.

Tone.—Normal in the upper extremities—Flaccidity in the lower limbs.

Sensory system.—All sensations normal.

Reflexes:		Superficial	Corneal	+	Visceral reflexes
Deep:			Pharyngeal	+	
Biceps	+	+	Plantar Flexor		Normal
Triceps	+	+	abdominals	+	+
Supinator	+	+		+	+
Knee	—	—	Skull and spine—		Nil abnormal
Ankle	—	—	C. V. System	}	Nil abnormal
			Ali. system		
			Res. system		

Ophthalmoscopic Examination.—The optic discs, both eyes are hyperaemic, swollen with blurred margins. Few exudates and Haemorrhages round the discs. Quite an advanced type of "Papilloedema" both eyes.

Eserine $\frac{1}{2}\%$ droops both eyes instilled.

Condition of patient same as on admission during the fortnight of her stay in the Hospital.

Patient died on 22—2—50.

CASE II.

A Case of Anthrax Meningitis.

Adaikala Mary, Aged 35, Christian, admitted on 15—1—50 at 8.30 A.M. Patient expired at 12.10 P.M. on 15—1—50.

Complaint.—Fever and unconsciousness since 3 days.

Previous illness.—No previous history of fits or fever.

Habits.—Non-vegetarian.

Family history.—Married; has six children all alive and healthy.

History of present illness.—Present complaint started three days back with fever. Since yesterday, patient is unconscious, not able to talk. Patient is not taking any feeds. Before this, she was taking her feeds normally. She is now passing urine and motion in bed. (She had an injury in her left thumb 15 days back while cutting firewood). Fits—Coming on and off since yesterday.

Condition on admission.—Patient is a fairly well-nourished individual of 35 years. Not anaemic, jaundiced or cyanosed. Patient is comatosed with occasional fits.

Pupils dilated—reacting very sluggishly to light.

Could not open her mouth. Has sign of injury left thumb.

Central Nervous system.—Intelligence speech etc., could not be elicited.

Cranial nerves.—Not examined.

Motor system.—*Power*—Could not be tested. *Tone*—Spastic in the upper extremities and lower extremities.

Co-ordination.—Could not be tested.

Nutrition of the muscles.—No apparent wasting.

Abnormal movements.—Nil.

Sensory system.—Patient unconscious and so sensations could not be tested. Patient did not appreciate the pain while the L. P. was done.

Reflexes.—Superficial:	1. Corneal	—	absent.
	2. Pharyngeal	—	could not be tested.
	3. Epigastric	—	lost.
	4. Abdominal	—	
	5. Plantar	—	Bilateral extensor.

Deep reflexes.—		Right	Left
Biceps		present	present
Triceps		"	"
Supinator		"	"
Knee		"	"
Ankle		"	"

Visceral reflexes.—Automatic evacuation of bladder and rectum after fits.

Gait — Could not be elicited.

Tropic changes — Nil.

Spine — No deformity.

Skull — Nil abnormal.

Decubitus of the patient — Patient restless in the supine posture. Does not respond to any external stimuli.

Neck rigidity present.

No Kernig's sign.

Respiratory system.—Respiratory sounds vesicular and heard equally in all the areas. No adventitious sounds.

Cardiovascular system.—Heart boundaries within normal limits. Heart sounds normal. No adventitious sounds.

Alimentary system.—Abdomen moves freely with respiration. Liver and spleen not palpable. No other palpable masses.

Patient died at 12.10 P.M., on 15--1--50.

Laboratory reports

Urine.—Acid. Albumin trace. Sugar plus; no bile salts or bile pigments.

Blood.—W.B.C. 16,200 per c.mm. D. C. predominantly polymorpho-nuclear. No Malarial parasites. Nil abnormal about blood smear. No organisms seen with Leishman's stain.

Blood pressure.—110/70 L. P. done; C.S.F. not under tension but blood stained was sent to the Bacteriological department for investigation.

Laboratory report.—Smear of C.S.F. stained by Gram's method. Plenty of pus cells and a large number of gram positive rod shaped bacilli with clear cut ends were seen. Bacilli were arranged in short chains of 3 or 4. A narrow strip of unstained area was present all around the bacilli.

A drop of C.S.F. examined under cover glass: Bacilli were non-motile.

Smear of C.S.F. stained by special method of McFodyeen: revealed the presence of capsule around the bacilli.

Culture of C.S.F.—Aerobic culture put up. Good growth was obtained on ordinary agar in 24 hours. The colonies were slightly raised, greyish white rather opaque with irregular wavy hair like margin with a rough surface.

The parallel wavy filaments of the colony were well seen with a hand lens.

A smear from the growth stained by the method of Gram revealed long chains of Gram positive bacilli with centrally placed oval spores, which had not taken up the stain.

Spores were stained by special method of staining.

In 1% semi solid agar medium stab cultures put up: Typical inverted fir tree like appearance of the whitish growth visible in 24-48 hours.

The organism present in the sample of the haemorrhagic C.S.F. from the suspected case of meningitis conformed to the morphological and cultural characters of *B. anthracis*.

Anthrax is primarily a disease of animals especially cattle, sheep etc. Men usually acquire the infection from some animal source or animal products.

Usually it involves the skin and takes the form of a malignant pustule and sometimes lungs and intestines may be involved.

Occasionally meningeal involvement of anthrax, as in the present case, has been reported.

(Ref. report by W. Dunscombe, Director, Medical Lab. Shanghai, B.M.J. 1190 January 30—1932).

My thanks are due to the Dean of the Govt. General Hospital and Medical College for permitting me to publish these notes.

A Note on the Conjoint Twins of Bangalore

BY

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We have at present in India a pair of pygopagus conjoint twins living in Bangalore. They are named Ganga and Gowri. They were on show at the Park Fair Exhibition in December 1948, when the authors saw them for the first time. Desirous of studying the interesting biological aspect of their condition, the authors met them later and extended an invitation to them to be at home with the authors. This brought forth a ready response from the twins. The next day the authors had the opportunity of observing the twins in a normal homely setting at table, rest and recreation, when the twins spent the larger part of a day with them.

In 1929 when the twins were in Calcutta Dr. B. N. C. Roy contacted them. He made a communication regarding them in the Indian Medical Gazette, 1931. In this he remarks "not even an ordinary photograph was allowed to be taken. They looked so very frightened and were so fidgety that with my best efforts I could neither get a good photograph nor a good skiagram." He, however, was able to get some photographs and they were published, though they were not good. Further the information he could gather was necessarily obtained, due to their shyness in discussing such matters, from their caretaker who took them around for the shows.

On the other hand our social approach to them was sincerely reciprocated. Perhaps this was partly due to the nature of the acquaintance and probably also to their older age at present. Any how we have been fortunate to ascertain from them, directly, information on certain facts which were previously only presumed. We were also able to make certain general observations on their habits and behaviour. These form the subject of this note. A medical examination was neither intended nor was it appropriate for such an occasion. But palmar prints for the study of the patterns of the friction skin of the hand were taken. These are only incidentally referred to in this paper, as they form the subject of a more technical and specialised paper being published elsewhere.

Family history.—The conjoint twins have a brother who had a pair of twin children, a boy and girl. These were evidently biovular. The boy died three days after birth.



The Conjoint twins.

Birth & Early Childhood.—Ganga and Gowri, the conjoint twins, were born of a poor Veerasaiva family in Arikere village in Kanakanahally taluk, Bangalore District. No authentic record of their date of birth is available. The parents being illiterate and superstitious, the conjoint twins were abandoned immediately after they were born under the notion that they were inauspicious children foreboding some ill-omen. The world should be grateful to one Captain Basavaraj (retired from Mysore army) who on hearing of the abandoned twins, played the foster father for a while, took charge of them, nursed them and ultimately restored them to the care of their parents, who accepted them after a good deal of persuasion. Their age at present is computed as fifty years on information originally gathered from the same person.

Later Childhood.—They were brought up in their village in a simple way. They learnt Kannada, reading and writing, and arithmetic and subsequently picked up Hindusthani. They can do ordinary sewing and knitting, play simple indoor games and can sing common folk songs. Their physical appearance during childhood was nearly alike. They suffered from an attack of small-pox simultaneously without much damage to their health and physical appearance.

Adult Age.—They have spent most of their life as show people visiting the important fairs and festival centres all over India. Twice they have gone abroad and toured Europe. The left component Gowri had an attack of pneumonia. She says that the doctors told them that she survived because of her union with her healthy sister. Later she had frequent attacks of "Rheumatic" fever that has left her emaciated. Now her teeth are bad and she is fond of drinking tea and chewing tobacco. These habits are not so marked in the conjoint sister.

If one had a fever coming on due to any ordinary ailment, the other would have the pyrexia setting in with a slight time lag of a few minutes. There seems to be an extensive vascular anastomosis at the site of union.

General description of the present condition.—The twins are not very similar now, though they have the same cut of face. The right component is more plump and strong and looks healthy, while the other is weak and emaciated and suffers from arthritis in some joints of the extremities. Both of them have a mole above the angle of the mouth on the inner side. Though not situated at exactly symmetrical spots, there is no doubt that the anlage of the mole at an earlier embryonic stage had a more symmetrical aspect and this leads us to the important inference that the hereditary factors determining mole formation (whatever they be) are genetic and come into operation at a very early stage in ontogeny.

The site of union is an extensive area of the lower back and side of the pelvis of the two components. A special window in the combined

frock worn by the twins exposes the site of union at the time of their exhibition. They sit and stand more comfortably facing opposite directions, but by constant habit they have learned to sit and stand facing the same direction though a little obliquely. There is marked scoliosis and twisting of the vertebral column. Due to the extensive union at the sacral and hip regions they say they always sleep both on back, very rarely both on chest. They walk usually with "crab like" progression which is a joint co-operative effort one walking forwards while the other in correctly co-ordinated unison steps backwards. In ascending stairs one climbs while the other helps by lifting herself from the lower step to lessen the strain of the climbing sister. By constant habit these actions and movements have become natural and one may even call "graceful".

Anatomical peculiarities.—From their own information we could infer that they have two separate urethrae and vaginae, but they have a common anal orifice. This confirms Roy's statement (1931). Their menstrual periods are not necessarily and absolutely synchronous, but might be separated by a slight interval. Though we saw a reduced print of their X-ray photograph with them it was not possible due to overlap of shadows to elucidate the precise nature of the union of the bony pelvis of the two components. Due to the prevailing general symmetry of the two components with respect to an imaginary axis through the line of junction it was thought worthwhile finding out if one of the components had a transposition of the viscera. We personally found out that the heart was not transposed in either and that there was no general transposition of viscera. Subsequently we have authentically ascertained that they do not have even partial transposition of the abdominal viscera. They were recently ill in hospital at Bangalore and after examining radiographs of their abdominal viscera, Dr. T. Seshachalam, under whose care they were, informs us (personal communication) that there is no transposition of viscera. The descending and pelvic colon is in the correct position in each twin; the two rectal canals join distally and open at a common anus.

Handedness.—Both of them are trained to be righthanded. They do ordinary embroidery work using their right hand and the same is used for eating and for all purposes requiring a little skilled work. The study of their palmar dermatoglyphs reveals that both of them are genetically left handed, though by training they appear right handed. A paper on their palmar dermatoglyphics under preparation by the authors would elucidate several interesting points on the handedness of the twins.

Mental capacity, temperamental reactions, emotions, etc.—Though their care-taker attributed slight superiority in mental ability to the right component, the authors found both of them to be similar in doing simple exercises in arithmetic, etc.

The right component Ganga is always playful and smiling with a child-like attitude to things around her, perhaps due to the good health she enjoys. The other is always quiet, serious and pensive probably due to her poor health. This might perhaps also explain her excessive habituation to tea and tobacco as contrasted with her twin sister.

Both of them are mentally alert to respond readily to humorous remarks. With great pleasure the twins themselves told us a story of how once during their tour they took only a single railway ticket and when the ticket examiner at the destination demanded two tickets, the first twin presented the only ticket, and when the ticket examiner wanted one more ticket she remarked "I have presented my ticket, please let me go, you can detain my sister for her ticket, if you like, by separating her".

We are extremely thankful to Dr. T. Seshachalam, Surgeon, Bangalore, who sent us valuable information which has been utilized in the substance of this paper. We are also extremely grateful to the twins, Ganga and Gowri, for all the co-operation they have given to us in this study.

Summary

The paper deals with the general features of a pair of pygopagus twins, named Ganga and Gowri, from Bangalore. The authors have obtained information of their family, early childhood, later childhood and adult age. They have also given some interesting incidents in their life. A description of their present condition is given with a photograph. Though they are not very similar now, they have the same cut of face. Because of the presence of a similarly located mole on both the twins, the authors infer that the hereditary factors determining mole formation are genetic and come into operation at a very early stage in ontogeny. The site of union between the twins is an extensive area of the lower back and side of the pelvis. They have separate urethrae, and vaginae, but a common anal orifice. There is no transposition of the viscera in either. Although both of them are genetically left-handed, as inferred from the evidence of palm prints, they have been trained to use the right hand for all skilled work. Though both are similar in mental ability, ill-health due to arthritis has produced in one considerable difference in the emotional outlook on life. A paper on their palmar dermatoglyphics, which will elucidate several interesting points on the handedness of the twins, is under preparation.

REFERENCES

- Roy, B. N. C. The Madras United-twins. *Indian Medical Gazette* 66, 26, 1931.
Seshachalam, T. Personal communication.

Dental Diseases in Relation to Oto-Rhino-Laryngology*

BY

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The Nose and paranasal Sinuses sit upon the upper jaw teeth, and the throat and tonsils and larynx are guarded by the teeth; and the ears though apparently look far away from the teeth, if one remembers that the malleus (small bone inside the middle ear) is developed from the first arch like the lower jaw, the intimate relationship of these organs is clearly realised. Besides the anatomical proximity if one glimpses at the close vascular, neural and lymphatic connections of each other, it is no wonder that we share in the travails and infirmities of each other.

No careful surgeon will ever dare to operate on the nose, throat, or sinuses, unless the condition of the teeth is satisfactory, as a preventive and prophylaxis against post-operative complications. The results are often, made or marred if this precaution is neglected.

In diseases like chronic pharyngitis, tonsillitis and laryngitis dental sepsis is one of the great etiological factors. Chronic nasal congestions and chronic rhinitis often yield to timely and proper attention of diseased teeth. Chronic headaches can often be traced to a septic condition of the teeth.

It is a dictum in otology, to look to the teeth specially the last molar, when a patient complains of a pain in the ear and no cause for it could be found in the ear.

Politzer was the first to report cures in cases in tinnitus aurium by the removal of impacted wisdom teeth. In cases of nerve deafness I have been struck by the remarkable improvement occurring when dental sepsis is eliminated.

Septal abscesses are often caused by the infection of the roots of upper incisors, 10-15% of maxillary sinus infections owe their origin to the upper jaw molars, and at least 5% of sinus infections infect the teeth. Nasolabial cysts owe their origin to the par epithelial debris of Molasses, and instances of dentigerous cysts simulating antral tumours are numerous.

One variety of Quinsy starts from the last lower molar often ill erupted.

I am painfully aware of at least a dozen cases of Ludwig's angina which have gone for tracheotomy, after the extraction of lower molars, whose roots go below the mylohyoid line.

Aberrant misplaced teeth have been responsible for many a dilemma in diagnosis. Recently I had a case of unilateral nasal discharge which was treated with penicillin under the mistaken diagnosis of sinusitis. X-ray films missed the diagnosis. Careful nasal examination showed a raised hard mass, about one inch behind the right anterior nares. It was thought to be a rhinolith. But on removal it was found to be a misplaced tooth. It may be of interest to know that up to 1945 only 75 cases of nasal teeth have been reported, of course many might not have been reported. Goethe was the first in 1767 to report it.

Loose teeth are a problem to the anaesthetist and surgeon. They have a knack of getting into larynx, trachea, bronchi etc., causing bronchiectasis, lung abscess and collapse of lung.

As for illfitting dentures and ulcerations of palate and cheek we have numerous instances.

Loose dental plates getting into oesophagus provide considerable amount of problems to the endoscopist for removing them. On analysing the causes it is often found that the denture had not been altered for fifteen or twenty years. The gum margins have shrunk and the dentures have become loose. I think it necessary that the dentist advised the patients to check up every year as a prophylaxis against these mishaps.

Pain in the teeth is a very common symptom in idiopathic neuralgias like trigeminal, sphenopalatine, and vidian nerve neuralgias, and Extractions of teeth would bring the profession into disrepute and leave the patient in a worse condition.

Growths originating in the antrum and pterygo-palatine fossa cause pain in the teeth and sometimes teeth become loose. With a self-made diagnosis of loose teeth, the medical profession is induced to extract the teeth. Then the growth protrudes through the site of the extracted teeth, thus bringing unnecessary disrepute to the profession and untold suffering to the patient. Therefore great caution is necessary before removing painful teeth.

Thus like good neighbours we suffer from the travails and infirmities of each other. We have no competition, but only collaboration. Our aim is common, to "cure sometimes, relieve often, but comfort always" as the Father of Modern medicine, Hippocrates, said.

* Paper read before the All India Dental Conference held in Madras in February 1950.

Our Medical Task

BY

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The problem which confronts the Government is providing more and better medical service to a greater number of people in this country. This problem is not peculiar to India. All the civilised nations of the world are confronted with the same problem in a greater or less degree. "There is a consensus of opinion concerning several important fundamentals of this problem. All are agreed that medical service should eventually provide everything that science can offer towards the preservation of health and the cure of disease and that it should make available these benefits to the entire population. There is agreement that medical service is not at present optimally organised, supervised, or distributed, but also that the development of plans for its improvement should proceed by the inclusive study of the many complex problems involved." In recent discussions on medical service in India there is a tendency to minimise the existing medical service and its achievements. It is not correct to assume that at present there exists little by way of medical service in towns and none at all in villages. In all head-quarter towns of the districts there are at present hospitals with an organised medical service manned by qualified medical men. There is at present in each district a health service unit also manned by qualified doctors and trained health workers. Scattered all over the presidency there is a net work of hospitals and dispensaries which are bringing, however inadequately, to its population something that science can offer towards the preservation of health and the cure of disease. At present the Government of Madras have in their archives a scheme for the spread of medical service to all parts of the presidency. The Government of India have been conscious of the urgent necessity for the expansion of the existing medical service so that its benefits may be made available to the entire population of India. With this object in view they appointed the Health Survey and Development Committee to make an inclusive survey of the many complex factors involved and advise them as to the steps to be taken to achieve this end. After a comprehensive survey of the complex factors involved the Committee has drawn up health programme in two parts, one a programme for the somewhat distant future and the other, a short term scheme covering two five years periods. They have taken the country-side as the focal point of their main recommendations realising the immense debt India owes to the tiller of the soil. Further the Committee remarks nearly 90 per cent. of the people in India live in the rural areas and the basic problem before the country is the provision of adequate health protection to this preponderatingly large section of the

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community. The Committee therefore made the village the chief beneficiary of their proposals. With regard to the indigenous system of medicine the Committee affirmed quite definitely that there are certain aspects of health protection which in its opinion can be secured wholly, or at any rate largely, only through the scientific system of medicine. Public health or preventive medicine which must play an essential part in the future of medical organisation, is not within the purview of the indigenous system of medical treatment as they obtain at present. The indigenous systems of medical treatment do not at present deal with such vital aspects of medicine as obstetrics, gynaecology, advanced surgery and some of the specialities. Further no system of medical treatment which is static in conception and practice and does not keep pace with the discoveries and researches of the scientific workers the world over can hope to give the best available ministrations to those who seek its aid. We entirely agree with the conclusion of the Health Survey and Development Committee that no justification is needed in confining its proposals to the country-wide extension of a system of medicine which must be regarded neither eastern nor western but as a corpus of scientific knowledge and practice belonging to the whole world and to which every country has made its contribution. The attainment of this objective, which may take about forty years is to be achieved through successive stages of intensive effort directed towards the production of the necessary trained personnel and the creation and development of the organisations and institutions which will form essential parts of the community's health service. The first ten years of the scheme will cost the nation 363 crores in non-recurring expenditure and 602 crores in recurring expenditure. The severance of Pakistan will balance the expenditure to be incurred by the accession of the states to the Republic of India.

It has been objected to the above scheme that India is a poor country and cannot afford the enormous expenditure contemplated. The prime necessity is the elimination of poverty and until such time the proposed scheme may be put in cold storage and in the meanwhile a make shift arrangement, with the resuscitation and utilisation of the existing systems of indigenous medicine and its personnel coupled with the available institutions and personnel of the modern medicine, should be made. But the elimination of poverty, involving as it does the whole economic system, is of necessity a slow process. It is no argument against the initiation of immediate steps for extending medical care as suggested by the Health Survey and Development Committee to say that complete solution will have to wait upon long range economic changes. It is evident that in some instances adequate medical care is a more pressing need than economic advancement. In extending medical service and perfecting its organisation quality must be preserved. Eventually only the best medical service should be perpetuated. Extension of inferior

service will at best be of limited value and under certain circumstances may be actually dangerous. For these reasons the implementation of the recommendation of the Committee on Indigenous Systems of Medicine in preference to those of the Health Survey and Development Committee or any other make shift arrangement as proposed in its report, is a perpetuation, not of the best available medical care, but of an inferior stage of our country actually dangerous. In this connection we would like to quote the directive of the Government of India to the Health Survey and Development Committee "to plan boldly, avoiding on one hand, extravagant programmes which are obviously incapable of fulfilment and on the other, halting and inadequate schemes which could have no effect on the general health standards and which would bring little return for the expenditure involved." Anybody who has read the report of the Health Survey and Development Committee will be convinced that the Committee has carried out this directive in an efficient manner.

Of the many problems connected with the organisation of medical service in this country the most urgent and at the same time the most difficult one, awaiting satisfactory solution, is how to provide the most effective medical service for the rural areas of India. The great importance of this problem is realised by all medical men and the Government of the country. The Prime Minister has emphasised this problem on many occasions. "The health of the villages requires special attention. The country derived its vitality from the villages. It is not enough for large imposing hospitals and other buildings to be put up in the towns; the benefits of health must be extended to the whole countryside." As noted above the Health Survey and Development Committee have taken the country-side as the focal point of their main recommendations because they realised the basic problem before the country was the provision of adequate health protection to the people living in the rural areas. At the outset we would like to correct the misconception that the villages are entirely without any medical service of the scientific kind in the present set up. The Rajah of Panagal introduced rural practitioners qualified in modern medicine to villages with a Government subsidy and supply of drugs. The present minister of Health when he was in charge of the same portfolio in the previous Ministry greatly improved this rural practitioners' scheme and placed it on a better footing. This scheme received a set back when the Madras Government started the Indian school of medicine and granted L.I.M. diplomas and as a result of public clamour, placed the rural dispensaries in charge of the L.I.Ms. Formerly rural dispensaries were situated in the midst of few villages under the charge of a sub-assistant surgeon. But the scheme has not been a great success for causes to be mentioned later. The recommendations of the committee on Indigenous Medicine for the solution of this problem are:—

(1) the institution of a three year diploma course to ensure a continuous supply of medical practitioners;

(2) the utilisation of the service of the registered practitioners of Indian medicine after giving them a six months' course in the elements of public health, minor surgery, obstetrics and other subjects. The observations of the Committee on possible criticism of its scheme is very revealing. "It may be said that we are giving the rural population an inferior kind of medical service. Our answer to this is that in the absence of any scheme like the one proposed by us, the villages will have to wait for some decades before they will get any better service and in the meanwhile will have to depend upon the local practitioners whatever they may be worth. We agree with the view of Lt. General J. B. Hance and Lt.-Col. D. P. Macdoland that though there is undoubtedly a danger in half-trained doctors practising medicine, yet, in rural districts it is better to have half-trained doctors than no doctors at all." In these remarks the members of the Committee are very apologetic of their own recommendation whose inadequacy and futility must have been clear to them yet they had not the courage to acknowledge it. Another reason why they would like the villages to be handed over to the practitioners of indigenous systems of medicine is very provocative. "The practitioners of the indigenous systems of medicine in most cases are ill-trained and their institutions of education and relief are ill-equipped, ill-housed and poorly staffed. In spite of all these drawbacks the people have still recourse to these systems, not merely because of the unavailability of institutions and practitioners of the Western system, but perhaps even more because they prefer the Indian medicine and method of treatment. Besides, this, many people hold the belief that the medicines of the Indian system are more suitable to their constitution and climatic conditions." As every one knows, the reverse is the truth. Wherever modern medical service is available in these rural areas the people flock to it in great numbers as is evidenced by the vast numbers attending certain rural centres run by some of the pioneering students of our medical colleges. Penicillin, Sulpha and anti-syphilitic drugs used in modern medicine are very much in demand in these villages and these new drugs seem to agree wonderfully with their rural climate and constitution. It would lead to a major tragedy of our time if a large section of the community living in the rural areas of India are abandoned to the ministrations of the practitioners of the indigenous systems of medicine and the half-trained products of the Indian School of Medicine, or of any other institution proposed by the committee of Indigenous Systems of Medicine without adequately bringing these rural areas into a scheme of modern medical service with all its unquestioned benefits. In the interests of the future welfare of the country the practice adopted in China, Japan, and U.S.S.R. of declaring a moratorium extending to a definite period of years after which the

practice of the indigenous systems of medicine will not be recognised is strongly to be recommended. The remarks of the New York Academy of Medicine Committee on Medicine and the Changing Order on the quality of rural medicine are worthy of notice in this connection. "Unfortunate as the rural situation is with regard to the quantity of service available, it is still worse as to quality. In some rural areas a great part of medical treatment is actually provided by those who have no professional qualifications. And there is the village drugstore, with a proprietor who may be good pharmacist but who is certainly not competent to diagnose or prescribe treatment. Finally, there is the stock of home remedies and procedures. Folk medicine is not to be entirely disparaged, but it is frequently inadequate and at times dangerous, for its use is not limited to the treatment of minor ills. It is employed, for example, in some cases by hundreds of ignorant Negro midwives in the South who combined it with much primitive magic. This can be quite fascinating to anthropologists, or to students of folk lore, but it is in the areas where such practice prevails that infant and maternal deaths are particularly high."

Those who have any acquaintance with our rural areas will appreciate the reality of these observations. One has only to substitute for ignorant Negro midwives, ignorant Indian midwives and the picture is true of rural India.

How to provide the most effective medical service for rural India poses not one but many problems—problems centering about the essential characteristics of the rural areas and their relation to the medical service deficiencies. "In varying combination and degree poverty, isolation and ignorance account for the lack of medical services in many rural areas, for the poor quality of much of the medical services now available, for the scarcity of good hospitals, for the persistence of diseases which modern medicine can prevent or cure, and for the relatively high maternal and infant death rates. Paradoxically enough, advances in medical science itself also account in large measure for certain of the deficiencies in rural medicine. Far-reaching changes in techniques of diagnosis and therapy during the past quarter-century have caused well-trained doctors to concentrate in cities because of their demand for access to good hospital facilities, easy reference to specialists, and ample opportunity to gain in knowledge and experience by association with other members of their profession. Isolation, perhaps as much as poverty, has delayed educational progress in rural areas. Inferior education, in turn, is responsible for ignorance, in this country even illiteracy, and ignorance has been at the root of some of the farmers' troubles. There are farmers whose attitude toward personal hygiene and medical services are those which were common among the mass of the population fifty or even a hundred years ago. Many follow a heavy and unhealthy diet, and are not apt to enquire into

the source of the water they drink. . . Becoming ill they are likely to dose themselves and waste their money on patent medicines. Last but not least, there is still current in rural communities the older notion that a hospital is a place to be avoided, and partly as a result, even the few hospital beds available are frequently unoccupied. This admirable summary of the characteristics of rural America, applies in toto and even with greater force to rural India.

In the light of the difficulties involved in any attempt to extend and improve medical care in the most needy areas of rural India many steps must be taken. This task will require many years for its achievement and it can be accomplished only step by step and in a cumulative and accelerating fashion. There is no room here for any shortcuts or any improvisations. The long term objective must be the five year programme recommended by the Health Survey and Development committee and a start must be made with the creation of the primary health centres suggested in that report. If the Government feel that they are unable to start this scheme due to financial stringency then an attempt must be made to start it in a modest way. A good public health service is the first essential today in many areas of rural India where poverty, isolation, and ignorance prevail. There is already in the presidency a well organised public health department staffed with qualified and experienced personnel. This department must undertake the pioneer work in teaching the populace the elements of personal hygiene, nutrition, and preventive health measures. Progress will be slow at first for the public health personnel will have to check water supplies and sewage disposal, immunize children against contagious disease, provide prenatal care, as well as, instruction in infant care for mothers and carry on a vigorous anti-venereal disease campaign and other related functions. That an energetic and well conceived public health programme can drastically reduce infant, child, and maternal mortality, as well as, the incidence of communicable disease has been demonstrated many times over. There are already District Health Officers who are carrying on this work on a modest scale in each district. The personnel of the staff of District Health Officers must be appropriately increased and supplemented by such elements as are not present in the present set up. The present quota of sanitary inspectors must be greatly increased and their training extended and intensified so as to include the above mentioned public health subjects. By doubling or trebling the present recruitment of sanitary inspectors and giving them the above suggested instruction a great move forward will be made. An intensive training for a period of 12 months ought to suffice for this purpose. Nurse, and midwives for maternity and child welfare work must also be added to the staff. Squads of well trained and well equipped workers to carry on the work of D.D.T. spraying and to attend to anti-malarial work must also be created, if they are not already in existence and attached to the staff of the District Health Officer.

The next important item is the securing of physicians to work in the rural areas. Hospitals and health centres are neither built or staffed in a day. The Achilles heel of medical service is the concentration of qualified medical men in towns. "The practice of medicine is both a science and an art and rare indeed is the doctor who can maintain the high standards he acquired in his medical college and teaching hospital under the physical, economic, and educational limitations of the isolated rural community." On account of this tendency for doctors to congregate in towns there has been a steady decline of country doctors, a phenomenon not peculiar to India by any means, as it has been also observed in America and England. The reason for this is that good doctors are not satisfied merely to earn a livelihood. They seek to practice medicine according to the high standards they have learnt in their colleges and for this they require facilities for diagnosis and therapy that are now to be found for the most part in urban areas. The first step in the dispersal of qualified doctors from towns to rural areas is the creation of hospitals in selected places which will afford young doctors good hospital facilities, easy access to specialists, and ample opportunity to gain in knowledge and experience by association with other members of their profession. As a first step in the dispersal of young qualified doctors the existing District head-quarter hospitals must be enlarged and equipped so as to accommodate 200 beds—60 beds for surgery, 60 beds for medicine, 30 for obstetrics and gynaecology, and 50 beds for the specialities—ophthalmology, ear-nose-throat, venereology etc. The surgical beds will include few beds for orthopaedics and the medical beds few for paediatrics. It is very essential to post to these hospitals qualified medical men with ample experience in their specialities to be in-charge of their specialities. These hospitals must be provided with X-ray units—diagnostic and therapeutic, well equipped pathology and bacteriology laboratories for serological diagnosis, and when available a dental department. Most important that these hospitals should run very efficient out-patient departments. The pathology and bacteriology laboratories can be run very efficiently by trained technicians under the direction of specialists. The basic idea is to start as many as possible complete hospital units which will attract young qualified doctors to pursue their post graduate education and gather experience in medicine, surgery and obstetrics. As the supply of qualified doctors become available these hospitals may be expanded to accommodate 300 beds. The existing practice of posting the District Medical Officer on the basis of seniority must be abandoned forthwith. The D. M. O. may be utilised for organisation work. Better still non-medical men with executive experience should be placed in the administrative charge of these hospitals so that the specialists may be free to devote their energies to their professional work. The next expansion when medical personnel become available is to improve Taluk hospitals to accommodate 100 beds. Till these are started the District Headquarter hospitals must be made the centres of village

medical work. For this purpose the starting of mobile clinics are suggested. They can bring medical help to a radius of 30 miles centering from the hospital. One well equipped ambulance is enough to start with. A separate personnel must be maintained for this purpose. Two qualified doctors, one or two nurses, one midwife, one compounder and one or two dressers will be needed on this unit. Such mobile units are doing yeoman service round about Vellore villages. These mobile clinics will obviate the necessity of starting elaborate arrangements in the villages. To begin with, the public health personnel will be resident or easily available to these villages. Mobile clinics can bring enormous benefit to people in particularly isolated areas, operated either by the rural hospital or as an adjunct of the public health service, they would be especially useful for maternal and infant care and immunisation programmes and in providing periodic dental care. A service of this sort can also be of value in educating the rural population on the fundamentals of hygiene and nutrition. Equipped with a small screen and a mechanism for sound reproduction the "clinic on wheels" could bring to rural areas otherwise cut off from educational contacts talks and demonstration produced for mass distribution by state and federal health agencies or by the staff of regional hospitals. This has been the experience of Rural America. This has also been the experience of Vellore hospital. Dentists are not available at present but in all other respects this example from America can be copied with immense benefit to rural India.

Association Notes.

A meeting of the Madras Medical Association was held at the Madras Medical College, on 22—10—49 with the President Dr. J. C. David, Deputy Surgeon-General, in the Chair, when various speakers addressed the gathering on the advisability or otherwise of accepting the Chopra Committee Report.

At the outset, the Secretary, Dr. C. K. Prasada Rao, said that a memorial had to be submitted to the Government, regarding some problems of the service. A sub-committee with Dr. K. S. Sanjivi, Dr. Mahadevan, Lt. Col. C. K. P. Menon, Dr. C. K. Prasada Rao, (Secretary) was formed to draft the memorial to the Government.

The Chopra Committee Report was then taken for consideration. Dr. P. Kutumbiah opening the discussion said that the report of the Chopra Committee had been with us for some time and the profession had an opportunity to study it critically and that before we attempt any discussion of the report it would be advisable to have a clear idea of the main problem to be tackled. He drew attention to the observations of the New York academy medical Committee Report which had been restated as far as India was concerned by the Health Survey and Development Committee under the chairmanship of Sir Joseph Bhore as stated below :

"The fundamentals of the problem are that medical services should eventually provide everything that science can offer toward the preservation of health and the care of disease and that it should make available these benefits to the entire population",

He said :

"The development of plans for the improvement of medical service should be preceded by inclusive study of the many complex factors involved and should not be directed towards the support of any preconceived scheme which has not been based upon such a study" and that the Health Survey and Development Committee appointed by the Government of India submitted a scheme which consisted of two parts, one a comprehensive programme for the some-what distant future and the other a short term scheme covering two five year periods.

He then traced the genesis of the Chopra Committee report and its original terms of reference. He went on to say that it was logical now to suggest to the Government of India a third committee to scrutinise the

report of this committee before it could be implemented and that the selected personnel of this committee should be so qualified as to be competent to examine the issues and conclusions of the Chopra Committee critically, go carefully into this question and give a considered opinion.

He stressed that in any scheme of extending the medical services quality should be ensured and the future plan should be such as to make all the advances in science available to the public.

He observed that the report of the Chopra Committee fell under three main heads namely :—

1. Suggestions to improve the teaching, practice, and organisation of the indigenous systems of medicine.
2. The problem of synthesis of the indigenous systems of medicine with the modern system of medicine.
3. Suggestions to meet the urgent demand of medical care, personnel and supply of drugs.

With regard to the first heading his opinion was that their suggestions may be taken for what they were worth.

The second item he said was the most controversial and with his characteristic emphasis showed that this committee was not competent to discuss the question. He analysed the statements of the prominent members of the committee and showed how they fell short of requirements to consider a question of this magnitude namely the synthesis of the two systems of medicine, Modern and Indigenous. He said that the main support for the possibility of synthesis brought forward by the protagonists of this view was the alleged success of the Indian School of Medicine in Madras. He quoted from the report the evidence of some eminent supporters stating that the Madras experiment was an utter failure. He finally concluded that in view of the fundamental differences inherent in the two systems they are not capable of being synthesized.

Adverting to the claim of the committee that their scheme would solve the problem of organisation of medical relief in rural areas he said as follows.

"Some of the recommendations under this head show more courage than knowledge. It is taken for granted that the indigenous systems of medicine can tackle the modern problems connected with medical relief, an assertion not substantiated by facts. The suggestions under this head do not solve any of the problems awaiting solution. Trained medical

graduates cannot be turned out any quicker under this scheme than under the present scheme, as it also takes five years under this scheme to train a graduate. The scheme of six months course for the practitioners of indigenous system of medicine is the most Toglakian one ever proposed. What is the idea of giving a six months course to these people in public health, minor surgery, obstetrics etc.? The indigenous systems of medicine, it is contended, are self sufficient and efficient. What then is the idea of giving these Vaidyas these additional courses? Preventive medicine is based on discoveries which have been made in the last fifty years. This knowledge is entirely foreign to the indigenous system of medicine. Except in the field of therapeutics these systems of medicine are woefully antiquated. To allow these vaidyas and Hakims to practise surgery and obstetrics would be a national calamity. Even in the field of medicine their knowledge is centuries behind the times. The claim that they can cure many diseases is based on a fallacy Appendicitis, Meningitis, Strangulated Hernia, Peritonitis, and other surgical diseases require all the knowledge which modern medicine alone can impart. Preventive medicine requires all the recent knowledge about bacteriology. Even in the field of therapeutics an intelligent appreciation of the pathology of the disease is essential. With the recent advances in chemotherapy and antibiotics the claims of ancient pharmacopias are fast vanishing".

Finally he concluded as follows.—The revival of the indigenous systems of medicine is bound to be a national calamity. Government must seriously consider the recommendations of this report. If they implement the recommendations of this report they would be putting the clock of medical progress in this country few centuries back. As pointed out earlier it is important to remember the fact that in extending medical service and perfecting its organisations quality must be preserved. Eventually only the best of medical care should be perpetuated. In all other departments of administration modern science is being requisitioned. Modern medicine is of very recent development and incorporates all the knowledge available from the other ancillary sciences. It is nascent and living. It is a growing science and is capable of immense potentialities. Politics should not be allowed to enter into the field of science and queer the pitch of progress. The Government should not be stampeded into any wrong or hasty decision by this inopportune and ill advised agitation to reinstate an antiquated and outmoded system of medicine whose value is more antiquarian than of any real use in the present formative state of our national life".

Dr. Srinivasalu Naidu spoke next. He agreed with all that was said by Dr. Kutumbiah and pointed out that modern medicine is based on many ancillary sciences and if any system of medicine has to survive it should be based on this background, If indigenous systems of medicine

should incorporate these ancillary sciences what comes out of this combination would be only a mutilated modern system of medicine under the guise of indigenous system.

Dr. G. D. Veliath also suggested that a third committee should sit to scrutinise the Chopra Committee Report before implementing it. He was of opinion that a synthesis of the indigenous and modern systems should be brought about only by experts and that too after much experimenting. According to him the correct thing to do, at present is to convert the existing school of indigenous medicine into a research institution.

Dr. R. K. K. Thampan expressed that it would not be possible to give a short term course in Gynaecology and obstetrics to the practitioners of indigenous systems of medicine without any previous knowledge of Anatomy and Physiology.

Dr. Sanjivi spoke next. He said :

"In the discussion of the place of the indigenous systems of medicine in the organization of medical relief in our country a great deal of sentiment and confusion have been brought into cloud the issues. The other day speaking at the meeting of the Indian Medical Association, Dr. Srinivasamurty based his arguments on.

- (1) An appeal to one's patriotic instincts and
- (2) the philosophic basis of Ayurveda to provide the desired solution to the problems of psycho-somatic medicine better than the more or less material concept of modern medicine.

Other favourite arguments of the supporter of the indigenous system of medicine are:

- (i) that they are cheap;
- (ii) that they are sought by the bulk of the people in India;
- (iii) that, because modern medical facilities cannot be rapidly extended to the villages, there is no alternative to the uncontrolled practice of the indigenous systems of medicine by Hakims and Vaidas who have had no institutional training at all, and any imposition of controls on these practitioners would mean the total denial of medical help to the rural population.

Let us look into each of these arguments dispassionately.

The appeal to our patriotic instincts cannot make us disregard our allegiance to scientific truths.

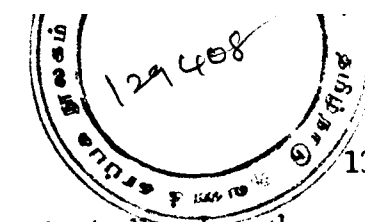
Regarding the philosophic background of Ayurveda, while not belittling the great importance of the psycho-somatic approach to medical problem, one should remember that all medical problems do not lend themselves to solution from this angle. Perhaps a study of Indian philosophy may suggest the answers to questions regarding soul and mind. But to the man with a megaloblastic anaemia the diagnosis of which requires certain definite procedures and the cure of which can be effected only by a few micrograms of Vitamin B-12, no philosophic treatise or discourse can give relief.

The entire substance of the Report can be said to be found in paragraphs 140 to 143 where the three steps to bring about synthesis of Western and indigenous systems of Medicine have been described.

A study of the first 76 pages of the Report detailing the recommendations of the previous committees and the existing conditions of medical relief is quite enough to show the dismal failure of the attempts made during the last 25 years on the lines of the 'first step' and the 'second step'—a process which has been referred to in the report as 'low level integration,' (He quoted extracts from the reports itself to show why this integration at "low level" failed.)

He went on to say . . . "While there can be no two opinions on the new medical outlook which makes a physician not only a medical expert but a friend, philosopher and guide there is no cause for the Chopra Committee having a cheap gibe in para 162.

We do not understand the suggestions in para 194 regarding the six months course which is prescribed equally for 'Registered Practitioners and for Practitioners duly qualified from recognised Schools and Colleges after undergoing the full course of four or five years' (See para 200). It is extraordinary that this course should be referred to as 'Intensive Post-graduate training' while the candidates need have had no institutional training whatever. The only graduation required is a certificate from a first class Magistrate, (See para 232). It is impossible to agree with the Committee's statement that 'given some extra training, these persons (most of these local Vaidyas and Hakims are either mere sellers of drugs or ignorant or ill-educated persons) can be usefully employed for rural public health work and medical relief'. (Para 204). This will certainly be 'to put the seal of approval on incompetence.'



As stated at the outset, we feel emphatically that the only possible means of synthesis is at the highest level and paragraph 264 of the report is worthy of immediate application".

He then quoted Para 182 which deplores the inadequateness of the institutions to train the Practitioners in indigenous medicine and also quoted Para 183 which gives the remedy.

He observed "If the major portion of the country's population is now being treated by the indigenous practitioners, it is not by the patient's choice or as a result of mature deliberation. Poverty, illiteracy and lack of any alternative condemn the poor man to be content with the advice he can get from any unqualified quack, if not from the old woman next door".

He further pleaded to extend the modern medical facilities to the most distant villages by a carefully planned scheme where in rapid and improved communications could be expected to make up for the deficiency in medical personnel. He said that the more suitable scheme would be to extend the Sanitary Inspector's course from 18 to 24 months with additional teaching in first aid, home-nursing etc., and to considerably enlarge the number of person trained to provide a simple yet efficient first line of defence of men trained in the ideology of modern medicine.

Finally he concluded as follows.—"In conclusion I must say that to a large extent we in the profession are to blame for the present state of affairs. We have followed the policy of *laissez faire* too long. It is time we form into small groups which will make an intensive study of matters connected with the organisation of medical relief in the country and this will conclude also medical education. This study group must work hard and produce well thought out and practical reports for submission to Government. I hope the necessary steps to constitute such a study group will be taken here and now".

The President then made his remarks. He paid a tribute to the integrity of Sir Ramnath Chopra. He said that after abolition of the licentiate course and later after the report of Bhore Committee high hopes regarding the future of medical administration in the country were entertained but the unexpected financial crisis shattered them. As regards the Chopra Report he said that we disagree with it on scientific grounds.

The following resolution was then passed and the meeting came to a close.

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Resolution

The Association is of opinion that in view of the divergent nature of the basis and fundamentals of the two systems it is not possible to effect a synthesis of the two system.

The Association also recommends that the Government should forbid the graduates of indigenous systems of medicine from practicing surgery and obstetrics and undertaking public health work."

The first Executive Committee meeting for the year 1950 was held on 7—1—50 at the residence of the President Dr. P. Arunachalam. The office bearers of the association were elected.

It was resolved that the Editor of the Journal and the Editorial committee of the previous year might continue for the year 1950. It was also resolved at this meeting to request Dr. Sir A. L. Mudaliar to deliver the annual oration of the association for the year 1950.

The second meeting of the Executive Committee was held at the President's residence on 22—5—1950. Dr. Sir A. L. Mudaliar's letter accepting the invitation to deliver the association's annual oration was read. It was resolved at this meeting to give a subscription dinner to felicitate Dr. J. C. David on his appointment as the Surgeon General and Dr. K. Vasudeva Rao on his appointment as the Deputy Surgeon General.

This dinner was held at the Madras Medical College on 18th April 1950.

The third meeting of the Executive Committee was held at the President's residence on 3—5—50. This meeting was called to consider the Surgeon General's letter to the President for the opinion of the association regarding the proposal of the Government to fix the upper limits of consultation fees of the Government Medical Officers of the state. The Committee strongly opposed the proposal and drafted a reply. It was resolved to call a meeting of the resident members of the association to consider the draft reply. This meeting was held on 5—5—50 at Madras Medical College with the President in the chair. The meeting was well attended. The matter was keenly discussed. Drs. M. Narayana Pai, P. Ratnaswami, C. Raghavachari, R. Mahadevan, G. D. Veliath, R. Anantanarayana Iyer, S. Govindarajan took part. It was resolved to send the reply to the Government after suitably incorporating the fresh points raised by the above members into the main body of the draft reply.

Prior to this i.e. on 27—4—50 a meeting of the members resident at Vishakapatnam was called by the Vice-President Dr. M. V. Ramanamurti to consider this issue. Members of the service who were eligible but who had not yet joined the association were also invited. In addition to the specific issue under consideration many questions regarding the popularisation of the association were discussed. Dr. G. V. S. Murthy offered some criticism on the working of the association and suggested some methods to improve it. Drs. Anantachari & D. V. S. Reddy spoke at length on the useful work of the association and appealed to the younger members of the service to join the association. They took some pains to dispel some misconceptions. The members of the association and the service present at the meeting disapproved the proposal of the Government regarding the consultation fees.

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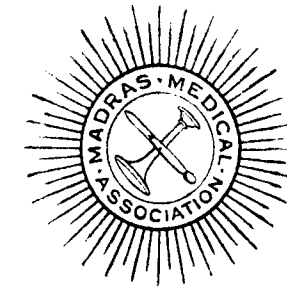
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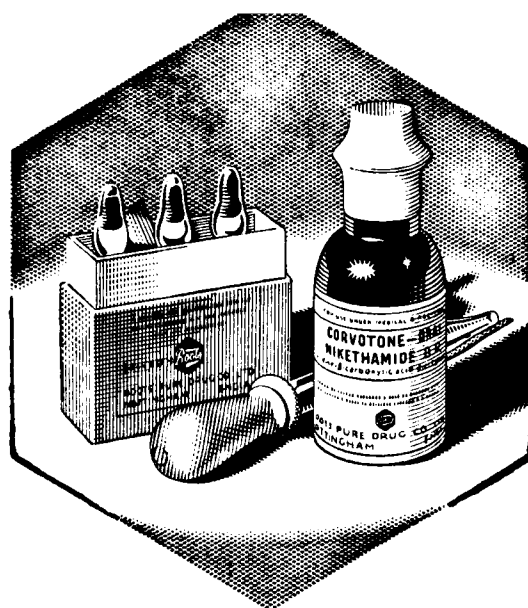
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The Place of Psychiatry in Medicine

BY

Dr. A. S. JOHNSON,

*Superintendent, Government Mental Hospital, Madras and Professor of
Mental Diseases, Madras Medical College and Stanley Medical College, Madras.*

“ When the physiologist, the philosopher and the poet would talk the same language, and understand each other, a true science of medicine will be possible ”. This was the opinion of Claude Bernard.

“ Psychiatry literally means the healing of the mind, and so the psychiatrist is the physician who is specially concerned with the diagnosis and treatment of mental disorders. Until fairly recently the term ‘ mental disorders ’ was used to refer only to those severe forms of sickness called the ‘ psychoses ’. Although these sicknesses are very frequent they are by no means the only or perhaps even the most important problems with which contemporary psychiatry deals. Psychiatry, the youngest of the basic medical specialities, in recent times has become a clinical speciality of the same importance as internal medicine, surgery, and pediatrics. As a matter of fact, within the last few years psychiatry has come to be recognised as the basic medical speciality which studies all psychological problems. It has also become the art of medical practice which deals therapeutically with these problems. It is based on the sciences of psychology and psychopathology just as internal medicine is based on the sciences of physiology and pathology. Indeed psychiatry has become so important that probably half of the problems which the average physician has to deal with are psychiatric problems, and it has implications of some sort for problems through the whole field of medicine. To-day the psychiatrist is perhaps the most highly trained of all the medical specialists ”.

In organic medicine, as it has been taught and viewed at till recently, the approach to the subject was based on the conception of the physical body and its functions, physiological, bio-chemical and pathological. Therefore the physicians and medical students tended to speak of patients under their care as "subjects". This dispassionate physical conception tended to dissociate the feeling of sympathy, love and kindness from the understanding of disease processes. Each patient was studied as a separate body suffering from some organic disorder, known or unknown. Hence when some patients complained of vague pains, sleeplessness, worry and such like unexplained symptoms, they were said to suffer from imagination. Physicians were unable to understand the significance of such vague disorders and yet they very wisely told the ailing patients that they suffered from their imaginations. Thereby the medical profession was trying to cover up the gap in medical information and understanding.

Medical psychology started almost in the form of common magic. Mesmerism was a method of treatment introduced by Mesmer and it was practised, for a time, without any understanding on the part of those who employed the method. Later, some attempt was made by the Paris and Nancy Schools to understand hysteria in the light of cures effected by mesmerism. It was left to Bruer first and later Freud to study the place of "free association" in the cure of some forms of mental disorders. By his intensive and masterly studies Freud established the basis of psycho-analysis and certain dynamic concepts regarding psychological medicine.

Some diseases like hysterias, anxiety states were understood to be caused by psychological factors, since Freud was able to demonstrate the causation of disease by the analytic method that he employed. He made it very clear that there is a conflict between the conscious and the sub-conscious and very often hysterical or anxiety symptoms resulted if normal reactions were not resorted to by the mental mechanism. During the period when Freud enunciated his principles, people recognised that some diseases had psychogenesis and others had definite (organic origin) physiogenesis. Even during that period there was a tendency to classify some diseases as functional as opposed to organic. In many disease conditions physicians spoke of a diathesis or a predilection and thought that certain types of diseases occurred in certain people with certain tendencies. Thus they used to speak of the "hyperasthenic gastric diathesis" in men who developed gastric ulcer. They also noticed a tendency for diseases to occur in certain families apart from the influence of heredity implied therein. This apparent dual concept of the origin of disease is bound to be short lived. With fuller understanding of the occurrence of disease, and the manifestations of the same, it is possible to recognise that the

body-mind reactions are interdependant and cannot be isolated in any concept of disease and hence the present day concept of psycho-somatic origin of disease.

The concept of the psycho-somatic origin of disease has far reaching effects not only in the diagnosis and understanding of disease processes, but also in the treatment of diseases as well. It provides a solid human conception of the patients ailing from diseases. It affords a unitary view of body-mind relationships in man and avoids the tendency at compartmentalisation of these combined influences.

Body-mind Relationship.—During the war, in one of the Surgical Wards of a base general hospital, a case which had a gunshot wound in the right calf muscles was under treatment. After a long period of treatment the injury healed, and the patient was sent to a convalescing depot preparatory to transmission to his unit. During the rehabilitation period in the depot, the patient complained that he could not walk properly and that he had pain in the right leg. An examination by the Surgical Specialist showed clearly that the muscles, bones, and nerves were all functioning normally. A psychiatric examination showed that the patient had developed a hysterical foot-drop and an anaesthesia round about the scar of the gunshot wound.

In a group of cases observed in the medical wards of the same hospital it was found that patients suffering from fevers, diarrhoeas, and anaemias, and the like, appeared pale, unhealthy and anguished. Even after prolonged treatment, and after the physical findings, blood examinations etc. had become normal the apparent pallor and anguish continued. Therefore it was found that mere treatment of their physical disorders did not produce any obvious improvement. A psychiatric examination revealed that there was an underlying anxiety syndrome super-imposed on the physical disabilities, the patients suffered from. The treatment of the latter resulted in complete cure of the disability.

From the above two conditions under review, one could see that physical disabilities were properly attended to and cured; but yet the patients did not recover normal health. Their mental conditions also had to be treated for the effective and complete cure. Therefore it is clear that ordinary drug therapy, or surgical measures, or other physical adjuncts, only helped recovery of the physical mechanism of the body, and for the fuller recovery of normality the psychological state of the mind has to be attended to as well. The ordinary feeling in the minds of physicians and surgeons during the treatment of disease processes is that they have done everything the moment all physical aid has been rendered. But it is clear that unless and until it is convenient for the mind to recognise, and to take notice of or approve of such physical cure, a complete cure of the disease process is not possible for any patient.

Therefore it is clear that environmental factors and emotional conflicts and personality dispositions, to a large extent, determine not only the causation of disease but also any cure that may be effected by the physicians.

In hospitals there are four types of psychological influences manifesting in cases under treatment:

1. Hospitalisation.
2. Psychiatric Overlay, Psychiatric Overlay.
3. Genuine Psychiatric cases.
4. Psycho-somatic conditions.

1. **Hospitalisation.**—When a patient is treated in a hospital, certain new conditions in life and adjustments in the environments arise for the individual in question. He very often becomes a centre of attention. Frequently large sacrifices are made for affording facilities for the ailing individual. The nursing facilities and other comforts make life very comfortable for him. The individual himself is freed from the necessity for maintaining competition and for working. Indirectly this afford him an opportunity for obtaining rest mental and physical. For a person whose urge or ambitions are at a low ebb, illness and hospital care for the same, happens to be a kind of escape from the fight of life. Like a child who craves for attention, the patient likes to remain in bed and maintain his disability, so long as the comforts continue. This desire to retain disease is a kind of hysterical reaction on the part of the patient. Further habitual stay in bed produces an indolence and indifference to work, and hence to get such chronic hospital cases get into active life is bound to be a difficult problem indeed. In such cases one could see the chronic tendency on the part of patients to remain in hospital and to retain the disease.

2. **Psychiatric Overlay and Psychiatric Overlay.**—This aspect of the subject would be best realised by studying the cases which occurred during wartime. Any person who handled cases in and from the forward areas, and to a lesser extent those who dealt with garrison cases, would be aware of the fact that certain psychiatric symptoms were manifest subsequent to the occurrence of physical lesions, either concurrently or subsequently occurring as sequelae, and causing prolongation of the symptoms. Prior to admission into war hospitals, for medical or surgical disorders, men were exposed in the front line to hardships of camp life, climatic changes, and pests on the one hand and on the other hand from the constant fear of the enemy, and of the firing and bombing attempts made by them. These men were experiencing hellish fears and discomforts of all possible

degrees. They were sent to well furnished modern base hospitals, with all possible comforts by way of food, attention treatment, and diversions, a contrast striking to the battle field conditions. In the case of men drawn from garrison areas, the training they underwent, while waiting their turn as reserves, the discomforts and hardships were not so great and hence the emotional reactions were not so marked. Cases received from the front showed marked fears requiring solution and they appeared as "fear syndromes". Even physical diseases caused by infections and parasites, like fevers, diarrhoeas etc., and local injuries, or wounds, were very often complicated with emotional upset. Either anxieties or hysterical manifestations complicated the picture, and even though the physical conditions were cured, the mental state continued to be present, and the disease showed itself in the form of a psychiatric overlay on the organic manifestations. Very often the form of the psychiatric disorder was determined by the type of organic lesion which was the original disability or disease.

Similarly, any case that is admitted into a general hospital is likely to be complicated by some psychiatric overlay or a psychiatric overlay. Psychiatric overlays occur, as described already just before organic lesions recover, due to subconscious influences, which tend to perpetuate the disorder for serving some end. On the other hand in cases with psychiatric overlay, the symptoms, both organic and psychiatric, occur concurrently each complicating the other but not necessarily being responsible for the other.

In some cases the patient suffering from physical diseases is afraid of the consequences of the disease itself, and hence develops a fear reaction. In this condition the fear is a genuine and a recent one and, frequently, of a physiological nature, as opposed to the fears pictured above which had a psychological end to serve.

3. **Psychiatric Cases.**—The third group deals with genuine, psychiatric cases occurring in general hospitals. Very often pure hysterical conditions in the form of fits, paralyses, anesthesias etc. are met with in general wards, and the diagnosis of these disabilities from organic disorders becomes a problem, unless the physician is familiar of the methods employed by psychiatrists. Frequently the diagnosis of such conditions is based on a process of elimination. Organic lesions are ruled out by a process of elimination following an examination of the signs and symptoms. It must be remembered that direct psychiatric diagnosis is possible under such conditions. The process of elimination indicates only the ignorance of the medical profession of the methods of psychological approach and diagnosis.

There are many other conditions which show similar psychiatric changes but they are largely of psycho-somatic nature, and hence they naturally fall under the next group.

4. Psycho-Somatic Disorders.—The view which was current in the early part of this century was that the bulk of disease were caused by organic changes, that is, alterations in the body cells and structures, or body fluids; that almost every bodily symptom could be traced down with sufficient diligence, to some deviation from normal body form, or to some extraneous influence such as infection. This viewpoint was the end-stage of extra-ordinary development of the medical sciences in the direction of physical investigation and chemical structure of substances. In medicine the concentration upon physical changes, on pathological lesions and bio-chemical variations, had an unfortunate result; the patient himself got lost. In their enthusiasm to make use of the new tools placed in their hands, the physicians and their collaborators lost sight of the patient as a human being, with ambitions and tastes and feelings. Good advancement was made in the understanding of medicine by the use of the physical methods but the need was to know more about the other aspects of the human beings who were suffering from disease. During recent days the other side of medicine has once more begun to come to the front. However fully a physical examination may be made and however elaborately laboratory investigation of a bio-physical and bio-chemical nature may be done, the patient would not have been adequately examined unless and until his mental condition has been assessed.

The term "psycho-somatic disorder" is usually taken to refer to conditions with clear evidence to show that the patient's emotional state has contributed a great deal to his illness. In many cases of asthma, for example, a disturbance in the patient's relationships to one of his parents seems to play a leading part, in the sense that the asthma would not have occurred without the strained relationship of the patient with his parents. This is indicative of one of the mechanisms by which asthmatic attacks can be produced. Sensitisation to certain physical substances (allergy) is the other mechanism which produces such attacks. There are many other conditions in which the influence of the mind on the body may precipitate illness, may aggravate it, and may prolong it. All these are not called psycho-somatic disorders. The length of time taken to return to full recovery after illness has been shown to be affected by the patient's mental state. In some cases there is some evidence to show that the time of onset of a tuberculous infection may be decided by a particular conflict in the patients' mind. In short the psycho-somatic approach may be, and has to be applied to the whole field of medicine, surgery, gynaecology and obstetrics. The influence of the mental element in the aetiology of illness may be extremely important, or it may be negligible, but it cannot be overlooked. The term "Psycho-somatic disorder", to be exact, would

refer to illnesses caused by psychological factors but not aggravated, by them, or when the psychological factors are superadded to the existing illness or when the illness is prolonged or initiated by psychological causes without being directly responsible for the illness in question.

Every one who suffers from psycho-somatic illness is not neurotic in the ordinary sense of the word. Psycho-neurosis and organ neurosis are two alternative ways in which the individual may react. The question why some react with nervous symptoms and others with vomiting, or back ache or other bodily symptoms may not be clear. The choice of the type of illness seems to be decided by some antecedent affection of the organ concerned. For example asthma may begin in childhood after an attack of whooping cough, and chronic diarrhoea may follow upon gastro-enteritis.

As we shall see, emotional disturbances and neurotic symptoms may accompany organic disease; for example, a patient with mitral stenosis may have an anxiety state, and his entire disability may arise from this. He may complain of head-ache, of dizziness, or fatigue, which cannot be ascribed to the valvular lesion, and which are, in fact, the outcome of this mental state. The presence of physical disease does not preclude the possibility of a mental disturbance existing with it. The discovery of a murmur or of alteration in the reflexes, or of any other physical sign, does not relieve us of the necessity of making sure of the patient's emotional state. There is no reason at all why a patient with a slipped intervertebral disc should not be depressed, and indeed, the depression may be more in need of treatment than the neurological abnormality. The pain from his slipped disc may be in part responsible for the depression. If so, it is our business to find this out, and to judge why the patient reacts with depression. Or there may be no connection at all; the patient may be depressed because his wife is ill, or his business is going downhill.

1. The Gastro-Intestinal Tract.—Every one knows that bad temper can upset the digestion; that fear may lead to looseness of the bowels, and a feeling of disgust to vomiting. This is a common observation of physicians as well as laymen. The working of the mind is linked with the working of the bowel. With every change of the mind, changes in the secretion, blood flow and the motility of the stomach have been noticed in the human being. Anxiety, resentment or hostility produce increased secretion of gastric juice, increase the bloodflow, and increase the motility of the stomach. Sadness, depression or fear decrease these activities. The gastric mucosa gets congested when anyone's face flushes. Such congested gastric mucosa resembles the picture of gastritis. The length of time food remains inside the stomach depends on the mental

condition. These facts have been proved both in man and animals by direct observation in cases with gastric fistulae or by means of the X-rays or with the help of other experiments.

Changes in the mucosa of the colon following pain, changes in the calibre of the gut, and in the pressure inside the gut have been observed when people have disturbing thoughts. Even the colour of the bile has been noticed to be changed with changes in the mental state. Therefore a state of well-being requires a smoothly functioning digestive system.

Mental pain acts on the alimentary tract through the central nervous system, and hence changes in digestion are commonly met with in psychiatric cases. The discomfort caused is very often spoken of as pain, but it is not affected by food. It is only a subjective feeling brought on by emotional changes.

Some of the symptoms happen to be symbolic and may be representative of a symbolic kick back in the subconscious mind of what is not wanted by the self-respecting individual. Many illustrations to the point may be had from the early life of children at school. Even an act like that of a tennis player getting angry with his racket when he misses a ball shows how his anger is deviated from the main object.

In many of these illnesses it would be noticed that an increase in dyspepsia or a recurrence of a duodenal ulcer happens to be due to a crisis in the patient's career. The aggravation very often synchronises with added difficulties in the life of such patients. The personality and constitutional make-up of persons suffering from duodenal ulcer is one of anxiety state. Whenever problems occur such persons develop gastric dysfunction. The gastric ulcer patient has an unconscious craving to be looked after and to be taken care of. Outwardly he is busy, active, responsible and hardworking. His need for dependance is covered up, and very often he feels guilty and diffident of something, and hence he tries to compensate for it by building up security. Pre-occupation with financial affairs is not uncommon in ulcer patients. This is not surprising since earning money is ordinarily a masculine affair, and duodenal ulcer is more frequent in men. The mechanism of over activity to compensate for an underlying dependance is common, but need not necessarily be indispensable. The disturbing emotion which leads to the onset of symptoms is often anxiety or resentment but the condition is preceded by prolonged grief. Commonly ulcer patients suffer in silence by "bottling things up" in their minds without caring to share their problems with others. This picture has been taken from a case that is very familiar to me. The pain or discomfort need not necessarily confine itself to the stomach but it may manifest itself as intestinal colic caused by segmental contraction.

Intractable diarrhoea has been observed in cases with subconscious fear. Many cases of ulcerative or idiopathic colitis have common personality features. Patients suffering from such disorders are often oversensitive, hesitant, selfish, passive in their attitude to life and lacking in forcefulness and aggressiveness. They are craving for sympathy and affection, but are regardless of others. At times chronic illness brings on personality changes and some personality features are at times the result of disease rather than its cause. Diarrhoea is not always an expression of passive fear. In a case the active career of a person became limited due to advancing age and diarrhoea followed an attack of gastroenteritis. The diarrhoea accompanying the infection became persistent and prolonged even though the causative bacilli had disappeared. The personality conflict which created an internal agitation prolonged the diarrhoea.

2. Cardiovascular Disorders.—In general practice frequently palpitation, pain or discomfort in the left chest are noticed in perfectly healthy people. A morbid fear of heart disease often begins when a person recognises a fast heart rate, especially at a time when number of sudden deaths from heart attacks have been reported to occur amongst friends and family members. People who are inclined to be of a self-condemnatory nature, or those who are prone to misinterpret and suspect others, or those who are of a hypochondriacal temperament always imagine that all possible diseases they hear about are affecting them. This is particularly so in cardiac disease, since a fear of disease produces rapid heart beat, and rapid heart beat so caused is considered to be a sign of cardiac disorder. Similarly in cases of hypertension, even the frequent reading of blood pressure tends to augment the fear of disease and indirectly the blood pressure also.

Rheumatic chest pain resembling effort syndrome is often caused by an anxiety state. The pain often comes on when the patient tries to run or to walk quickly uphill. In such cases the heart itself is normal and the condition is a psychiatric disability.

Similar conditions may occur in patients with actual heart disease. One should not forget that with a certain amount of valvular heart disease healthy functioning of the heart is possible, and not infrequently, the defect is brought to notice when the patient complains of a dysfunction caused by a psychiatric conflict. Organic disease and neurosis can and often do coexist. In such cases a study of the personality of the patient would help the physician to assess the amount of psychiatric overlay. Hypertension and migraine have similar psychiatric origin in many cases. Elevation of blood pressure is well known during excitement, and was very often noticed in patients who were suffering from fear syndrome during the war. Even oedema has been described to have resulted from psychiatric trauma.

3. **Genitourinary Disorders.**—A study of the physiological and the psychological aspects of the hormone cycle shows a close correlation between the two. The nature and direction of instinctual drives are related to the function of the ovaries. During oestrone activity the thoughts of the subject are directed towards the other sex, and with follicular ripening this heterosexual desire becomes more strong. This may result in a wish for sexual gratification, or a defence against it, an overt attempt at satisfaction or a defensive attitude of fear, and hence a state of tension results if satisfaction is not achieved. During progesterone activity desire is withdrawn from the outer world and concentrated on self. This is accompanied by a passive receptive attitude and a pleasant relaxed state. This may be considered to be a psychological preparation for pregnancy and motherhood.

There are cases of pseudocyesis where changes of pregnancy are exhibited without actual impregnation. These cases show how the mind influences the endocrine system, and the idea of pregnancy affects the function of the pituitary and other endocrine glands, even though there has been no organic cause for bringing about the physical changes manifested. Menstrual variations also are brought about by psychological causes. Even in cases of sterility fear of pregnancy may act by causing anxiety and preventing full participation in the sexual act, and hence preventing impregnation. It may also occur in women who are fond of make-ups and who worship their dress and their features. They are juvenile and comparatively underdeveloped for conception, and are in possession of a psychophysical pattern of behaviour militating against conception.

Enuresis is well known to be caused by psychological factors.

4. **The Endocrine System.**—The endocrine glands serve to translate nervous stimuli into metabolic reactions. The endocrine system is subject to nervous influence and the endocrine glandular functions themselves determine behaviour and constitutional changes.

Thyrotoxicosis often follows emotional conflict. Patients suffering from thyrotoxicosis are known to be originally likeable and of above average intelligence. In these cases there is often an abnormal mother-child relationship, and the children very often happen to share the mother's anxieties and burdens. Men who later developed thyrotoxicosis are known to depend upon their wives as upon their mothers. Further they show some evidence of hypogonadism. Women shortly after labour show inordinate fatigue, intense irritability, coldness, and dryness of the hair. These symptoms are removed by the administration of thyroid. The climacteric changes are often due to the feeling of the world slipping away from the grips of aging people, and not so much due to the atrophy of sex glands.

Diabetes.—The personality make-up of patients suffering from diabetes shows an attitude of suspicion of people occupying the parental role. Their general infantile personalities make it easy for getting the physician, male or female, to play the part of mother. Diabetics are skilful in hiding facts from the physician, and also the fact that they do not co-operate in the attempt at cure. Most of these patients are passive and want to be taken care of and hence the disease is retained and the urge for getting well is absent. They do not give details regarding their growth and tend to hide them.

The physical findings and changes are due to emotional factors and they have an endocrine basis.

5. **Rheumatism.**—During war men complained of vague pains and generally in civil life women complained similarly of such pains. In these patients there were no physical signs of organic disease in the bones and joints. Psychogenic rheumatism places its victims at the mercy of changes in the internal environments such as changes in mood. The pains do not depend upon the changes in weather but upon the changes in the individual. The patient is antagonistic towards the doctor and nurses indicating thereby his feeling that the environment is responsible for his illness.

6. **The Respiratory System.**—Psychologically caused asthmatic attack may be initiated by emotional factors created by excitement, or by psychological problems created by environment, or due to some fears. A feeling of guilt may be responsible for such attacks. Very often the tightening in the chest following fear is responsible for localising the the disability to the chest region.

Fevers even are recognised to be caused by psychological factors. The equilibrium between an infective agent and the person's forces of resistance may be upset by mental stress. The time of onset of pulmonary tuberculosis may be determined by a change in the patient's life situation. The same mechanism may operate in any other infection as well.

Diagnosis and Treatment.—The judgement of psychosomatic disorders is sometimes difficult. Further the assessment of the influence of these factors and the relative proportions in which they are responsible for the production of any lesion is also at times difficult to assess. But the knowledge that such influences and such factors have a great part to play in the production and cure of disease is bound to help treatment of disease a great deal. The entire system of classification of disease, which rests at present on a foundation of morbid anatomy, needs to be revised, and the conception of origin of disease from the psycho-somatic point of view should be introduced.

(1) Personality patterns produce disorders of function which form pathological lesions when maintained over long periods and particularly so when localising influences are suggested by accident, injury, disease or discomfort.

(2) A skilful and sympathetic interview leading to an understanding of the personality details of the patient and the environmental factors influencing his conduct has to be made.

(3) Behaviour could be studied during group reactions and the method can be used for treatment as well. Group reactions are considered to be of great diagnostic value and they are utilised in the formulation of the psychodynamics of an illness.

(4) Personality diagnosis with the aid of thematic apperception tests and Rorschach's tests also would be helpful.

(5) A study of the dreams of the patients would be necessary.

Treatment.—Treatment of psycho-somatic states depends not only on correcting the personality trends but also on correcting the environment. If the age period is sufficiently impressionable and if the motive and urge for cure intact correction of the personality defect may help. In other cases the environmental stresses must be removed.

Occupation therapy, which started as part of psychiatry, is steadily finding its way into General Hospitals. Unless there is some work to do patients begin to brood and vegetate. All work is stimulating. Success and progress in work give more confidence and pleasure for work. The choice of work should be according to taste to prevent the sting of being felt as labour. Spontaneous desire for a particular kind of work would indicate also the suitability of the person for the work. Idleness and monotony tend to produce gloom, depression and a tendency to ruminate. These inclinations pave the way for developing psychiatric complications in general diseases.

Recreation is a form of therapy in so far as it affords opportunities for relieving the tension of being formal and of being tied up by conventions. It also serves as a method of socialising men before they rejoin routine duties on physical or other recovery.

The study of medicine has become more and more complex. The beauty of the study lies in noticing the link between organic diseases and the psychological factors causing diseases or following diseases. Very often physicians have been carried away by the spectacular and the concrete. They like doubting Thomases wanted to see the physical changes

before they considered any condition as disease. Times have changed. The pure administration of drugs or removing growths surgically do not complete a cure. Treatment embraces a wider range of affairs. Treatment no more means attention to the body; it is an attention on the personality of an individual and a correction of all adverse influences.

L. G. Rowntree says "Psycho-somatic medicine represents the summation of environmental (including sociological) influences. When these factors all operate in harmony health results; when they are in conflict, disease makes its appearance. Solomon, reputed the wisest of men, taught that 'As a man thinketh in his heart, so is he'. The role of mental and emotional factors in disease was recognised early by Paracelsus and by Van Helmont, but it is only within the last three decades that a body of information has been assembled on the basis of which, this recognition can be practically applied in diagnosis".

We have seen the important part mind plays in the causation and cure of disease. We also know that people are averse to attending mental hospitals as patients due to the stigma attached to mental disease and this arises admittedly from a feeling of despondency and inability to cure these diseases. But we have seen what is possible in the field of psychiatric medicine by way of treatment. We realise also the vastness of the subject. The primary field for such practice of psycho-somatic medicine is in general hospitals and district hospitals. Then only such feeling of despondency would be removed.

The Occipito-Posterior Position and its Management

BY

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The Occipito-posterior position is one of the most common causes of delay in labour whether it be in the primi para or multi. Practitioners working in rural areas under severe handicaps are very often confronted with this problem of the management of these cases and it is from their angle that this problem is discussed. This communication is therefore meant to the general practitioner and not to the specialist.

The incidence of occipito-posterior position varies according to different authorities—from 8% to 25% this wide range is mainly due to the time at which the position is first diagnosed. Suffice it to say that on an average this incidence is about 15–20%. Multiparity with the resulting lack of tone of the abdominal muscles, changes in the shape and size of the pelvis, placenta praevia, tumours of the soft parts, etc. all contribute to the production of this malposition. All the same we come across a good number of cases where the position is found without any evident cause—i.e. the position is primary. It is with this primary occipito-posterior position that this short paper deals with.

The Diagnosis.—It is imperative that the attending practitioner should diagnose this position if present, in the last week of pregnancy or early in labour so that he may be fully prepared to deal with the complications that are sometimes likely to arise in the course of labour in some of these cases. This position can, with a little care and practice be diagnosed by abdominal palpation. Whenever the baby's back is felt on the right side of the mother, always be on the look out for an occipito-posterior position. The back is felt far out in the flanks and it is not easily made out; the limbs are felt with great ease; the head is often felt unengaged at the pelvic brim and is not fully flexed with the result that the occiput and sinciput may appear to be almost at the same level. Especially in a primipara, if you find the head not engaged in the last week of pregnancy or early in labour the practitioner should always bear in mind two common causes—cephalo-pelvic disproportion and occipito-posterior position of the vertex.—The foetal heart is usually heard far out in the flanks.

If however he is called in after labour is well established and the membranes have ruptured, it may be difficult to diagnose this condition by abdominal examination; but a vaginal examination will usually help in correct diagnosis. On examining per vaginam he will find that the posterior fontanelle is felt near one or other of the sacro-iliac joints and the anterior fontanelle is felt with greater ease in the opposite anterior quadrant of the pelvis. In very late cases a large caput would have obscured these landmarks when the only method of diagnosis will be to pass the half hand into the vagina under anaesthesia, palpate the whole head and either locate the occiput or the ear. The flap of the ear points towards the occiput.

The course of labour.—To understand the proper management of these cases it is necessary to have a clear picture of what nature can do in these cases. The first stage of labour is often prolonged due to weak uterine action—perhaps the cervical reflex which stimulates uterine contractions is weak in these cases because of insufficient stimulation by a deflexed head. The membranes often rupture prematurely; the pains gradually increase in intensity as the head descends with increased flexion till finally the long internal rotation is completed by the time the head reaches the outlet and delivery then takes place as in an ordinary occipito-anterior position. Given enough time with good uterine contractions 80–85% of these cases end successfully. But sometimes complications are likely to occur.

The Complications.—The common complications are failure of rotation, reverse rotation of occiput when the occiput instead of rotating to the front takes a short turn into the hollow of the sacrum and deep transverse arrest. When the occiput in spite of good second stage pains fails to rotate and continues to occupy its original position it becomes what is known as a persistent occipito-posterior. Delivery under such conditions without help is impossible. When reverse rotation occurs labour may again come to a stand still, sometimes however if the baby is only of average size and pelvis roomy, natural delivery may occur—the baby being born face to pubes. Deep transverse arrest often occurs when the pelvis is of the Android type—the male type of pelvis—which is sometimes met with in women. In this type of pelvis there is, in addition to a wedge shaped brim, a certain amount of narrowing of the transverse diameter of the cavity, the outlet and the subpubic angle. Under such circumstances, the occiput in its rotation forwards is arrested transversely in the cavity due to lack of space. This transverse arrest is a common occurrence in this type of pelvis and often gives rise to considerable difficulty in labour, ending in still births and if neglected or mishandled even in maternal death due to ruptured uterus.

It is clear from what has been said above, that the occipito-posterior position unfortunately so common, can give rise to immense difficulties in labour and if not properly managed will end in still births, severe trauma

to the mother, postpartum haemorrhage and infection as a result of prolonged labour and the interference of the doctor.

The Management.—The practitioner may be called in to see the case either early in labour or late.

Early in labour.—A thorough examination is necessary. Abdominal palpation should help in the diagnosis of this position. In a primi para, it is necessary to rule out cephalopelvic disproportion. Should there be the least suspicion of disproportion as often there is, the patient must be sent to a hospital. Never undertake to manage labour in suspect cases of disproportion in the patient's house. Institutions are the only place for such cases. If there is no disproportion, it is necessary in a primi especially to know what is the shape of the pelvis. As mentioned before, the android type of pelvis very often gives rise to immense difficulties in labour to tackle which an ordinary practitioner has neither the training nor the facilities. Here his work is mainly prophylactic—that is—try to diagnose the condition and if present send the patient to a hospital without the least hesitation. He must therefore make a vaginal examination in all these cases of primipara and multipara with bad obstetric history. First of all he must palpate the two Ischial tuberosities and roughly gauge the distance between them—if the space between the two tuberosities will accommodate his four knuckles he can consider that outlet as normal. On the other hand if he finds that it will barely accommodate three of his knuckles that outlet is not adequate and he should anticipate difficulty. Actually he can easily measure this diameter even with an ordinary tape. On an average this is about 3½"—4". If it is less than 3½" he should anticipate difficulty. The attending doctor should also at this time palpate the pubic arch and form a rough idea about the pubic angle. Ordinarily if the transverse diameter of the outlet is contracted, the subpubic angle also is correspondingly narrowed and vice versa. Next he should proceed to make a vaginal examination to assess the capacity of the pelvic cavity. The Ischial spines are important landmarks in the cavity. If the spines are unduly prominent and close together, it means contraction in the cavity. By this examination the practitioner will be able to find out whether the pelvis is android or not. If as result of his examination he feels that the pelvis is not the usual female (gynecoid) type where there is enough room in the cavity and outlet, my advise is that he must send these cases to a hospital. He has been called in early in labour and if on diagnosing an abnormally shaped pelvis and an occipito-posterior position he keeps the patient at home, he is not doing the right thing by the patient. Should he decide to tackle such cases at home, he alone will be responsible for any mishaps that may take place. On the other hand if he finds that the pelvis is of the normal female type he can undertake the management of these cases with greater confidence.

The important principles in the management are :

(a) The labour is going to be a prolonged one and therefore you have to prepare the patient both physically and psychologically. Reassure her, use all your art to allay her fears and encourage her. Do not starve her. Her general strength must be preserved. Glucose drinks are very useful.

(b) Give enough time. Most of these uncomplicated cases given enough time will deliver naturally; at the most may require a little help in the last stage.

(c) Some cases will give rise to complications; therefore try and find out early in labour if possible, which are the cases that are likely to give trouble.

Ordinarily, if the patient is having good uterine contractions, if your examination reveals a normal female pelvis, if the membranes rupture only after full dilatation of the cervix and the patient has a strong pelvic floor, you can expect either a natural delivery or at the most the patient may require a little help towards the end of the second stage. For, the above signs are usually indicative of forward rotation of the occiput occurring normally. If on the other hand, you find the pains are weak, the membranes have ruptured prematurely, the pelvis is android and the head is not engaged, you can be sure that such cases will give immense trouble. Therefore watch your patients for sometime. If they fall into the last category send them to a hospital. If they are of the first category, you can look after them at home.

A word about sedatives. If the uterus is acting normally and efficiently it is better not to administer sedatives. If the pains are weak and the patient is nervous, sedatives are useful and indicated. Pethidine—100 mgms.—is a very useful drug. Morphia ½ grain will ensure good rest. Too much of sedation is definitely harmful. Once the pains are well established, it is wiser to avoid sedatives.

When to interfere.—Herein lies the crux of the whole problem. There are Obstetricians who interfere early in labour and obtain good results. There are others who are very conservative and allow nature to take its course interfering only when nature finally fails. A sound practice would be to steer a via media and therefore interfere neither too early nor too late when nature has finally failed. In a primipara, it is a sound policy to assist the labour if there is no progress after a couple of hours of good uterine contractions, after the membranes have ruptured and the cervix is fully dilated and the head gone through the brim. Under such circumstances if the occiput has not completed its rotation and labour is not progressing, even in the absence of maternal or foetal distress, it is best to terminate labour instead of continuing to wait and watch for maternal or foetal distress. In a multipara one could cut down the two hours to one hour.

The nature of interference.—The delivery if decided upon will of course be under these conditions with forceps. Under anaesthesia a careful vaginal examination should be made to find out the exact position of the head. There are two things you can do at this stage—to rotate the head manually into anterior position and apply forceps or apply forceps and then rotate the head with forceps and deliver. Both methods have their advocates. Manual rotation is a harmless procedure and is successful in the early cases. It may fail in the delayed ones. Forceps rotation is successful not only in the early cases but also in some of those late cases where sometimes manual rotation fails. Its one great drawback however is, that if it is not properly done or carefully done, it will cause severe trauma to the mother. That is why many condemn this procedure. But if this operation is done with proper care, there is no reason why it should be dangerous. Sometimes during a manual rotation the head may be dislodged to the pelvic brim and the resulting forceps delivery may be made more difficult owing to the high level of the head. It is almost always necessary to dislodge the head a little first, before you can manually rotate the head. In a primipara a deep episiotomy will be useful and is often a necessity.

An important fact to realise is that so long as the greater diameter of the head is not gone through the brim of the pelvis, it is safer to avoid applying forceps. Delivery with forceps in this condition will be very difficult, often it may fail and should it succeed it may cause grave trauma to the foetus and sometimes to the mother. Under such circumstances where the major portion of the head is above the brim of the pelvis, the cervix is fully dilated and retracted, in multipara, with a fair amount of liquor amnii still in the uterus the best method of effecting delivery is by internal podalic version and extraction.

Late in labour.—Unfortunately in rural practice the doctor is often called in for the first time only after the patient has long been in labour and the grannie and the village midwife have given up all hopes of effecting delivery by their techniques. The doctor often finds an exhausted patient, the uterus either in a state of tonic contraction or inertia, the cervix is fully dilated, there is a large caput on the head and sometimes a good portion of the head could be felt above the pelvic brim. The foetal heart may or may not be audible.

These are really very difficult cases. Here in these neglected cases the practitioner's prime concern is the mother. Where the head is gone through the brim of the pelvis he should under anaesthesia carefully locate the position of the head and deliver with forceps either after manual rotation which often fails in these conditions or rotation with forceps which may succeed. Sometimes the delivery is effected face to pubis. If he finds much of a difficulty in the extraction, irrespective of the foetal heart it is better to perforate the head and complete the delivery. One should have no qualms

in perforating just because the foetal heart is audible. It must be clearly realised that with such a big caput on the head and after so many hours or days of prolonged labour, the baby's condition is far from being satisfactory and even if you are lucky to get a live child after a very difficult forceps delivery which causes so much trauma to the mother, you will find that almost always you will lose the child in the neonatal period because of the intracranial damage sustained during delivery. Hence in these very late cases where forceps extraction is found to be very difficult, perforation gives a much better chance for the mother; she is often thus saved from the shock of a very difficult forceps extraction.

Where he finds that the head is still at the pelvic brim and there is a large caput which is visible at the outlet—, if possible, he should shift these cases to hospital. Unfortunately facilities for shifting are often not available. Under such conditions it is really a trying time for the doctor. Here again his prime concern is the mother. The child is perhaps irrecoverably damaged even though the foetal heart can be heard. The uterus may be tonically contracted or lax from inertia. It is here that the practitioner is tempted to use pituitrin. Whatever you do, *Do not use Pituitrin at this Stage*. You are inviting disaster in the shape of rupture of the uterus if you use pituitrin now. Do not attempt internal podalic version either, in these very late cases. The most conservative treatment gives the best results as far as the mother is concerned. So if you can't shift her to a hospital all you can do is to put her under anaesthesia apply forceps: try one or two good pulls, and if it fails, don't persist with the traction; perforate and deliver. If the foetal heart is inaudible from the beginning, you must perforate before applying unnecessary traction with forceps. It must be fully realised that high forceps gives rise to extreme degrees of shock which the practitioner has no facilities to treat and hence this operation must be avoided in practice.

The failed forceps.—It is not uncommon to apply forceps and fail to effect delivery. The two common reasons for this are: (i) the head is too high—i.e. the greater diameter is above the brim. (ii) Unrotated occipito-posterior positions of the vertex. If you refrain from applying forceps when the head is still at the brim, you will avoid failure under the first category. With an occipito-posterior the forceps sometimes slips. That is because the position has not been correctly diagnosed and attempts at delivery made without rotation either manually or with forceps. Even if this malposition is not made out before the application of forceps there are various signs during the forceps application and traction which indicate that you are dealing with an occipito-posterior position. Firstly you will find certain amount of difficulty in locking the blades, secondly on traction the forceps shows a tendency to rotate to one side or other because of the commencing rotation of the head, thirdly, as you pull, you will find that the vagina and vulva begin to gape even before the head descends and

lastly if you still don't notice these warning signs and persist with your traction, the forceps will slip. You will see therefore that even if you fail to diagnose the position before attempting to deliver, there are so many warning signs indicative of its presence. If you bear these in mind and watch out the failed forceps under this category also will be reduced to the minimum.

Occipito-posterior position is still responsible for a good number of still births and maternal morbidity and even mortality. Careful assessment of all the factors early in labour; picking up those cases which are likely to give trouble and sending them to hospitals, careful expectant watch in labour, interfering neither too early nor late will give the best results. In delayed cases there is very little that you, or even a hospital can do as far as the baby is concerned. But it must be fully realised that a difficult forceps delivery is an exhausted woman often gives rise to great shock which can be properly treated only in hospitals and not in domiciliary practice. The practitioner would be well advised to avoid these dangerous fruitless operations just to save a problematical live foetus who even if born alive at the cost of the mother might itself succumb in a few days.

Modern developments in midwifery lay great emphasis on the shape of the pelvis and its effect on labour and nowhere is it so important to realise it as in the management of these occipito-posterior positions. Unfortunately it is a special study; but I have tried to incorporate one important aspect of it which can be done in rural practice—i.e. the diagnosis by a simple vaginal examination, of the android type of pelvis. I would repeat it again, that if you come across such a pelvis it is always best to send the patient to a hospital for delivery. Your role under such conditions, if you are called in early, is to advise the relations to take her to a hospital. If however you are called in very late, you should proceed on the lines mentioned elsewhere.

Adrenal cortex and water metabolism

BY

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The role played by the posterior pituitary in the maintenance of water balance of the body is well recognised. It is claimed that the adrenal cortex is equally important in regulating water metabolism. The cortical hormones influence water metabolism chiefly in three different ways. (1) They control electrolyte balance and as an osmotic consequence regulate body water content. (2) They seem to have a direct action on the renal tubules producing diuresis. (3) They exert vaguely defined influences over certain extra-renal factors such as absorption of water from the intestines, permeability of capillaries and cell membranes and partition of salt and water between extra-cellular and intra-cellular fluids.

Salt retention and its effect on water elimination.—The osmotic consequence of electrolyte imbalance caused by cortical hormones is one of water retention. In adrenal insufficiency artificially produced and in Addison's disease, sodium and chlorides are lost and potassium is retained. There is a total salt loss from the body accompanied by loss of water and dehydration. Administration of cortical hormones causes salt retention and consequently water retention. The most effective cortico-steroid producing salt retention is desoxycorticosterone acetate (D.C.A.). The first effect of D.C.A. administration is retention of sodium and chlorides and elimination of potassium. The increase of salt in the extra-cellular space draws water from the intra-cellular regions. Also, water elimination by the kidneys is impaired resulting in oliguria. Plasma volume increases and oedema is caused. If however, the administration is prolonged, tissue dehydration will stimulate the thirst mechanisms causing polydipsia and subsequently polyuria. Thus, polyuria and oedema might occur together. The polyuria caused by D.C.A. is not considered as a direct diuretic effect on the kidneys but as a consequence of polydipsia. Other cortico-steroids are not such effective salt retainers as D.C.A. Corticosterone and dehydrocorticosterone are only weak salt retainers, while 17 hydroxycorticosterone and 17 hydroxy 11 dehydrocorticosterone (compound E) have been found in certain cases to enhance sodium excretion. The same hormone has been observed sometimes to promote salt retention also. It has been difficult to assess the exact role of individual steroids on electrolyte metabolism. The action depends on the dosage, duration of treatment, and certain other conditions.

The diuretic action of cortical hormones.—All cortical hormones possess a diuretic action to variable degrees on normal, dehydrated and water loaded animals. The mechanisms of action of the different hormones however vary.

Desoxycorticosterone acetate administered to animals in normal water balance produced varying effects, sometimes diuresis sometimes water retention. The effect depended upon the salt intake. Polydipsia preceded polyuria. D.C.A. produced a diabetes insipidus like diuresis only in one instance. The diuresis caused by D.C.A. in normal animals must be considered to be due to retained salt stimulating thirst, polydipsia and then polyuria. Other cortical hormones did not give any pronounced diuretic action on normal animals. In dehydrated rats D.C.A. produced mild diuresis but not in dogs. Continued administration however, produced diuresis.

The diuretic effect is well seen under circumstances tending to upset the normal water balance. In normal animals, ingested water or saline solution is eliminated quickly and water balance is restored. The rate at which extra water is eliminated by normal animals is increased by administration of cortical hormones. The hormones protect the animals from the possibility of water intoxication.

The normal diuretic response to water drinking is defective in adrenalectomised animals and in Addison's disease. Such animals are more liable to water intoxication owing to defective water elimination by the kidneys. Administration of cortical hormones relieves the defect in water elimination and protects the animal from liability to water intoxication.

It is claimed that the full action of certain diuretic agents is obtained only if adequate amounts of cortical hormones are present. The diuretic effect of adrenaline and thyroxine is reduced after adrenalectomy. It is probable that proper diuretic action of drugs requires the presence of adrenal cortex.

The mechanism of the diuretic action of cortical hormones is two-fold. There is evidence that cortical deficiency causes decreased renal plasma flow and thus reduced glomerular filtration. It is possible, therefore, that cortical hormones increase glomerular filtration rate by enhancing glomerular circulation. This effect is, however, only of minor significance. The more important action is on the renal tubules. Reabsorption of water from the tubules is reduced by cortical hormones. Defective activity of tubular epithelium is a long recognised effect of adreno-cortical insufficiency.

Extra-renal aspects of cortical control of water metabolism.—Absorption of ingested water from the intestine is reduced in cortical deficiency. It is suggested that the sluggish water elimination in adrenalectomised animals can be explained by the slow water absorption. But it has been observed that water administered parenterally is also excreted only slowly. Another extra-renal factor which might possibly explain imbalance of

water metabolism in adreno-cortical deficiency is alterations in the permeability of the capillary wall and cell membranes. Absence of cortical hormones seem to increase capillary permeability to dyes. It is possible that fall of plasma volume in cortical deficiency is partly due to passage of water into tissue spaces and intra-cellular areas. Inability of plasma administration to control circulatory collapse in Addison's disease may be due to escape of fluid from the extra-cellular space. Disturbance of water balance can also be explained on the basis of shift of electrolyte between extra-cellular and intra-cellular areas. Distribution of sodium and potassium between extra-cellular and intra-cellular fluids is upset in cortical deficiencies. Potassium increases and sodium diminishes inside cells and water passes from the extra-cellular to intra-cellular area causing a fall in plasma volume. D.C.A. administration produces a reverse effect.

Comparative action of the different cortical hormones on water metabolism.—All cortical hormones are effective in preventing the symptoms of water intoxication in adrenalectomised animals. Desoxycorticosterone acetate is most effective in sodium retention and indirectly producing polydipsia and polyuria. 17 desoxy 11 dehydrocorticosterone, the amorphous fraction and whole cortical extracts have a greater effect in producing direct diuresis. Other steroids, progesterone, estrogens and androgens have salt retention action like D.C.A. but do not show any diuretic effect except progesterone which has mild diuretic effect also.

Inter-relationship between adrenal cortex and other endocrine glands in water metabolism.—Cortex and posterior pituitary—There is an inverse relationship between the antidiuretic hormone of the posterior pituitary and the cortical hormones. The posterior pituitary retains water while the cortex eliminates water. In adrenalectomised animals, the antidiuretic hormone increases in circulation but in hypophysectomised animals the cortical hormones do not increase in circulation. Because of the increased circulation of antidiuretic hormone, replacement therapy with cortical hormone in cortical insufficiency and Addison's disease is not quite successful in restoring water balance. In animals with both hypophysis and adrenal cortex removed cortical hormones are very effective in causing prompt diuresis.

Cortex and anterior pituitary—It has been established that a pronounced diabetes insipidus will not be produced if the anterior pituitary is removed along with the posterior lobe. The diuretic effect in diabetes insipidus is caused by the anterior pituitary in the absence of the check on diuresis by the posterior lobe. The anterior lobe exerts its diuretic action in three ways, (1) Through an adrenotropic hormone it stimulates cortical activity which in its turn causes diuresis. (2) Through the thyrotropic hormone it stimulates thyroxine production which increases general metabolism and also stimulates the adrenal cortex causing diuresis.

(3) Through its own growth hormone it stimulates general metabolism and consequently diuresis. Thus it may be seen that the adrenal cortex is concerned in the production of diabetes insipidus.

Thyroid and cortex—It has been recognised that Thyroid stimulates diuresis. Thyroid also stimulates cortical activity. Therefore it is supposed that thyroid diuresis is indirectly produced through the cortex. Though thyroid influence on diuresis is not exerted entirely through the adrenal cortex, it has been observed that in the absence of cortical hormones thyroxin is not effective in producing diuresis. In hypothyroidism, however, diuretic response to water intake is normal.

Cortical influence on water balance in conditions of stress.—When animals are subjected to cold, trauma, drugs, toxins etc., the initial shock phase is characterised by retention of administered fluid which is followed after 24 hours or more by a countershock phase with the reverse effect. It is considered that the initial antidiuretic effect is the result of inadequacy of cortical hormones and the later diuretic response is due to production of larger amounts of hormones when stimulated by stress. The function of adrenal cortex in adaptational syndrome is well recognised.

Action of cortical hormones in epileptic and other forms of convulsions associated with tissue hydration.—In idiopathic epilepsy, patients become more susceptible under conditions causing tissue hydration. Also, the threshold for electro-shock and drug induced convulsions is lowered by tissue hydration. This sensitiveness is lowered by administration of D. C. A. The same hormone is used as treatment for epilepsy; its beneficial effects are considered to be due to the salt retention induced.

In conclusion, it may be stated that adrenal cortex plays an important role in the maintenance of water balance along with the posterior pituitary. Its function in water metabolism under normal conditions is not very significant. The delicate adjustment of the water content of the body of animals already in water balance is the function of the posterior pituitary. Cortical action assumes importance under conditions tending to upset the normal water balance *i.e.*, conditions of stress.

REFERENCES

- Role of adrenal cortex in physiological processes—Swingle and Remington—Physiological Reviews—1944—Vol. 24, No. 1, p. 89.
Adrenal cortex and water metabolism—Robert Gaunt, James H. Birnie, and W. J. Eversole—Ibid—1949—Vol. 29, No. 4, p. 281.

Our Fight Against Leprosy

BY

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Presiding over the third All-India Leprosy Workers Conference at Madras on October 3rd, 1950, Dr. E. Muir, the well known Leprologist made the following significant observations. Summing up the results of anti-leprosy work in India since 1920, he remarked :

"We now know a good deal more about the disease than we did then, but it is questionable if that knowledge has to any extent caused a diminution of leprosy in the Country".

Discussing the methods in force in India for the control of Leprosy, Dr. Muir said :

"Supposing that of the estimated ten lakhs of victims of leprosy in India, only one-fifth are open cases (and this is a low estimate) then there are two lakhs of potential spreaders of infection of which only some 14,000 (about 1 in 15) can find accommodation in residential institutions. Noble work is being done in many of these institutions but they can have little effect in diminishing the disease as a whole. In fact some of the most popular and best run Colonies and Sanatoria, though unable to admit more patients for lack of funds and capacity, yet attract patients from a distance with the result that neighbouring towns become infiltrated with open cases or small uncontrolled Colonies are formed in their neighbourhood the inhabitants of which are treated in the institutions as out-patients, so that an establishment, one of whose main objects is the control or eradication of leprosy may unwittingly become the indirect cause of further dissemination of the disease".

Speaking of the Leprosy out-patient clinics, Dr. Muir continued "No doubt these clinics have done some good work, especially to patients with the milder forms of the disease, but here again the good has been counterbalanced by open cases travelling from long distances in public vehicles to attend the clinic, and sometimes even spending the night among unsuspecting contacts on the way.

The above words of Dr. Muir after 30 years of leprosy work in India give a true insight into the stupendous problem that leprosy presents in India to-day. We face the horrible fact that for the last 30 years there has been no diminution of leprosy in the country. It has been on the other hand insidiously but slowly and steadily increasing and spreading, and unless we find some potent drug which can kill the infection and completely sterilise the patient on short treatment, there is no prospect with our present methods of ever eradicating leprosy from India. We have at present about 2 lakhs of open cases free in the country—a potential danger, the dire effects of which cannot be estimated. Within a period of one year or 5 years there is the possibility of this number doubling or trebling itself, and almost before we fully realise it, the problem of leprosy in India may assume proportions that may stagger the nation. In this connection the following statement from the Annual Report of the Indian Research Fund Association for the year 1949 is well worth quoting. "The work of the Acworth Leper Home in Bombay had shown that about a quarter of the contacts of leprosy patients on careful examination, show clinical and bacteriological evidence of leprosy. It was still more surprising to find that some perfectly healthy and normal looking contacts harbour bacilli in their skin". This amply testifies to the insidious and silent nature of the danger, that is in our midst.

Among the major scourges of India, Leprosy stands out as the most difficult to eradicate or control. It is a chronic disease, the infection very often lasting for years and not easily amenable to treatment. We know of no intermediate host or medium at which the vicious cycle can be broken. With our present knowledge the only method of controlling the spread of the infection is *effective isolation of all the open infectious cases*.

This demands stupendous effort and the expenditure of a large amount of money. But sooner or later it has to be done if India is to be freed from the curse of leprosy. Every day the number of infectious cases goes on increasing so that the longer we delay, the greater the difficulty. Leprosy in India is a national catastrophe and demands at once a full hearted national effort. Our schemes of reconstruction and designs for prosperity can wait, but the problem of leprosy must be tackled now and immediately. Delay is fatal. Like Cancer it spreads insidiously and very soon we may find it too deeply rooted in the nation that we cannot pluck it out.

Our present day leprosy clinics attached to District Headquarters and Taluk Hospitals and a few Sanatoria here and there may bring relief to individual patients but from the point of view of prophylaxis and prevention, they are worse than useless. This aspect of the problem has been pointed out by Dr. Muir in his significant observations. These clinics naturally attract patients from the neighbouring villages and many of the

open cases unable to find accommodation as in-patients settle down close to the hospitals in towns and the disease rapidly spreads. The whole set up of our anti-leprosy work calls for a thorough change and reorientation.

Our cities and towns where the lower strata of society live crowded together in horrible surroundings form the most potent centres for the spread and dissemination of leprosy, and in any campaign against leprosy the infection must first be stamped out from these centres. All the leprosy clinics in cities and towns, in-patients or out-patients must be abolished and transferred to places outside the city limits. We have at present no clear idea or accurate estimate of the number of open cases in our big cities and towns. A vigorous drive to spot these cases must be launched immediately and all the infectious cases must be isolated outside the city where a leprosy hospital and sanatoria must be built to accommodate them. Let us not be frightened at the prospect of isolating 2 lakhs of infectious cases all at once. Let us remember that this number is spread over the length and breadth of the land and in any one single town or village the number of infectious cases may not be many. If we proceed from one city after another, beginning with the Capital City in each Province, the task will not be formidable. The hospital must have sufficient accommodation to take in all the poor infectious cases while the rich and the well to do who are willing, can be given the option to build their own habitations in the isolated area. Thus every city and town in India will have outside the city limits—but not very far away, a Leprosy hospital and sanatorium big enough to accommodate every infectious case within its limits. After the towns and cities are thus cleared, the same method of isolation nearby can be tried in each village or group of villages. This method has the advantage that, though isolated, the friends and relations of patients are sufficiently nearby to visit them even daily or bring them food or refreshments, and we can work from one place after another making sure that little by little certain specific areas are being cleared of infectious cases. Thus, in a few years' time, we will be able to isolate all the infectious cases in India and the curse of leprosy can be brought under control. As it is we have no place that can be considered safe—whether town or village. One comes across open cases in trains and trams, in shops and hotels and even in schools and boarding houses, while an ever increasing stream of helpless patients roam about the streets and trek from place to place spending the night in any open space, verandah or bench. Often these verandahs and benches are used by unsuspecting children the very next morning.

Summary:

Leprosy is spread by contact with infectious cases and the only effective method of controlling the spread of leprosy is to isolate these infectious cases so that they may not come in contact with healthy individuals.

At present we have in India about 2 lakhs of infectious cases of which only about 14,000 are accommodated in institutions. The rest are at large in the country spreading the infection to unsuspecting contacts.

Our present day anti-leprosy work in the form of small clinics attached to District Headquarters and Taluk hospitals and a few sanatoria here and there give relief to individual patients, but from the point of view of eradicating the disease from the country they are worse than useless.

A scheme is put forward of completely clearing certain small specific areas of all infectious cases of leprosy and isolating them closely, starting first with the towns and going on to the villages.

Therapeutic Value of Local Analgesic Drugs

BY

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Keeping pace with the increasing demand for relief from pain, the continued researches in the Pharmacology of local analgesic drugs, have resulted in a clearer and more definite understanding of their action, so much so that these drugs are now extensively used in the treatment of many diseases in addition to Regional analgesia. The dread of accidental intravascular injection has yielded place to deliberate intravascular injection for beneficial results and the availability of safe non-toxic pharmacological antidotes has removed all fears of idiosyncrasy.

The common local analgesic drugs now used are:

(1) Procaine (Syn. Novocaine, Ethocaine, Planocaine, etc.).
Useful for short Regional analgesia and Intravascular Procaine therapy.

(2) Nupercaine (Percain) for (a) Surface analgesia.
(b) Spinal analgesia and
(c) Nerve Blocks.

This has greater preponderance of action on Motor nerves than sensory.

(3) Amethocaine Hydrochloride (Syn. Amethaine, Decicaine, Pantocaine) for Surface analgesia
Spinal „
Nerve Blocks and
Local infiltration.

This has greater effect on sensory nerves than Motor.

(4) Benzocaine (Anaesthetic) used for lozenges. Best suits for broken skins and packing lacerated wounds.

The least toxic of all is the one of p-amino benzoic acid ester group Procaine and idiosyncrasy for this drug is practically nil. The most toxic

but yet the longer acting is the Quinoline derivative 'Nupercaine' whose incidence of idiosyncrasy is high. Fortunately when used for Subarachnoid analgesia, idiosyncrasy is said to be almost absent.

Since the easily available Barbiturates are direct Pharmacological antidotes an oral premedication of a quick acting Barbiturate like Seconal Sodium given about 30 minutes before, not only acts as a sedative but also minimises risk of toxicity.

Symptoms of Idiosyncrasy.—Convulsions, rapid breathing pallor loss of consciousness and later cyanosis, respiratory and circulatory failure. If as soon as convulsions appear 5 c.c. of 5% solution of soluble Thiopentone (Pentothal Na, Intra-val Na etc.) is given with Oxygen to inhale, then convulsions cease immediately and the patient will recover dramatically.

INTRA-VASCULAR PROCAINE THERAPY

1. **Intravenous route.**—Bier of Germany was the first to introduce this in 1909, but it did not become popular until 1941, when it was revived in America after further light was thrown on the therapeutic value of Procaine administered in the undermentioned conditions.

Mode of administration.—A 1: 1000 solution (0.1%) in sterile 5% Glucose in physiological saline or in normal saline only, i.e. 1 gram of Procaine in 1000 c.c. of saline, is used and given as a slow drip intravenous infusion. Injection rate is about 30 to 60 drops per minute but could be given safely and continuously each time, the quantity required depending upon the achievement of therapeutic effect. The infusion could be repeated even 4 or 5 times a week.

Toxic manifestations occur only when the rate of injection exceeds 20 c.c. per minute and the following explanations is offered. Normally when Procaine is injected into the tissues it is slowly absorbed into the blood stream where it is hydrolysed immediately by an esterase into para-amino benzoic acid and di-ethyl-amino ethanal.

Liver is also supposed to take part in this process of hydrolysis. The toxic manifestations are said to be due to the presence in the blood stream of excess concentration of unhydrolysed Procaine which had not the time to undergo hydrolysis. But in a slow infusion hydrolysis is so rapid that the concentration necessary for toxicity is never reached. Hence the safety in a slow infusion.

The following are the conditions in which this intravenous Procaine therapy has been found to be very successful.

Cardio-vascular system:

- (a) **Paroxymal Tachycardia**—A dose of about 200 c.c. has reduced the heart rate to about 80 per minute.
- (b) **Cardiac irregularities, Arrhythmias and all conditions of abnormal rhythm.**

Procaine has the peculiar property of

- (i) diminishing the irritability of cardiac conducting system.
- (ii) Shifting the pacemaker back to sino-auricular side.
- (iii) Diminishing vagal excitability.

Thus procaine not only checks the heart rate but also restores the regularity or rhythm.

C. Arteries (Blood vessels) It relieves the spasm of blood vessels and produces vaso-dilatation. Hence it is used in

- (i) Treatment of embolism.
- (ii) Vaso spastic conditions like Thrombo-angeitis-obliterans —Raynaud's disease etc.
- (iii) Arterio-sclerotic gangrene.
- (iv) Migraine.
- (v) Angina Pectoris.
- (vi) Acute exasperation of Primary Hypertension.
- (vii) Peri-arteritis Nodosa etc., etc.

Digestive system.—(1) Prurites of Jaundice.

(2) Pain of Biliary system.

(3) Painful Gastric crises etc.

Nervous system.—(1) Paralysis Agitans (Parkinsonism). In this disease it improves co-ordinate movements and abolishes tremors and Rigidity for a few hours.

(2) Tetanus—Lowers the severity and frequency of convulsions.

Psychiatry.—(1) Over excited states.

(2) Dementia Praecox—Doubtful results.

Urinary system.—By dilating the arterioles in the kidney it increases secretion of urine.

Neuro-Musculo-Skeletal system.—The therapeutic value in this is very wide. Following are a few conditions in which results are very encouraging.

- (i) Low back pain.
- (ii) Osteo-arthritis.
- (iii) Rheumatoid arthritis.
- (iv) Arthro-pathy.
- (v) Pain of pathological fractures.
- (vi) Pain in Phantom limbs etc.
- (vii) Pain of flat foot.

In Burns.—Shock of extensive burns is minimised to a very great extent. The Procaine is dissolved in Plasma itself and administered. By dullening the exposed nerve endings it reduces pain apart from shock and enables dressing also of the burnt area.

In Surgical conditions.—(1) Diminishes post-operative shock and pain.

- (2) Pain of amputated stumps.
- (3) Dislocations.
- (4) Post Cholecystectomy colic.
- (5) Shock of multiple injuries and transport of such patient.
- (6) Total analgesia for amputation of extremities.

The above are only a few conditions and to cover the whole field is outside the scope of a short article like this.

Intra-Arterial Procaine therapy.

First introduced by Goyanes of Spain in 1908 has all the values of intravenous route. It is more useful than intravenous therapy in following conditions.

- (1) Relieving vasospasm of arteries.
- (2) Treatment of embolism.
- (3) Arterio-sclerotic gangrene.
- (4) Total analgesis for amputation of extremities.

Procaine in Retention Enema. (2% solution in starch)

- (1) Abolishes pain of chronic ulcerative colitis and reduces tenesmus in all conditions.

Sub-arachnoid Procaine therapy. (Spinal)

- (1) Hirschprung's disease - Congenital megacolon-one injection cures this disease often.
- (2) Exasperation of Hypertension.
- (3) Vaso spastic conditions like Thrombo-angeitis obliterans.
- (4) Peripheral arterial embolism.
- (5) Dysmenorrhoea.
- (6) Anuria in crush syndrome.
- (7) Anuria in Eclampsia.
- (8) Palliative treatment for relief of pain in Malignancy where Absolute alcohol injected after a test with Procaine.

Local Blocks.

A 1 : 1000 solution of Amethocaine Hcl is preferred to 2% Procaine.

The relief of viscerosensory pain by nerve blocks has been so satisfactory that antagonists of Euthanasia have appealed for more schools on this subject.

Local Blocks for cardio-vascular diseases.

- I. *Angina Pectoris*:—A left sided paravertebral block of C₇ to T₆ not only affords relief but also is said to delay the onset of further attacks.
- II. *Essential Hypertension*:—Bilateral blocking of the Sympathetic chain at various levels especially T₆ to L₁ has been tried but the results are too transient. Its only value has been to assess the indication for surgical treatment.
- III. *Vaso spasm of upper extremities*:—Stellate ganglion block affords marked relief but Horner's syndrome which incidentally results is distressing to the patient.

Vaso spasm of lower extremities:—Lumbar ganglion block.

Respiratory System.—Intercostal block for relief of pain in pleurisy, Herpes Zoster etc., and block of C₃, C₄ and C₅ or Phrenic nerve in Hiccup is of daily routine in medical wards.

Peri-sympathetic injection for treatment of Bronchial Asthma has proved a failure.

Digestive system.—Sympathetic block of T₅ to T₁₂ on left side relieves pain of Pancreatitis, whereas the same on right side that of chronic Cholecystitis. This measure is of diagnostic value also.

Splanchnic block by the posterior route has been carried out for very many pathological conditions of upper abdominal viscera. However, the most common conditions in which this measure is of value are

- (1) Cardio-spasm and
- (2) Biliary colic.

Brachial plexus block is used for painful conditions of upper extremity with prompt and definite relief.

In Obstetrics.—Continuous caudal analgesia was first introduced in America in 1941 by Hingson. Southwork and Edwards administered it for not only painless labour but also in treatment of Essential Hypertension.

In Eclampsia with Anuria segmental spinal analgesia affecting T₇ to S₁ segments not only increases the secretion of urine but also lowers the blood pressure and helps the further treatment of the case regarding extracting the child if necessary.

Salvaged Treasure

“To add a library to a house is to give that house a soul”

—Cicero.

Even as early as 1835, the founders of the Madras Medical School realised the importance of a library and provided a separate room in the original modest school building costing only Rs. 10,000. It is difficult for the present generation to imagine the eagerness and the pleasure with which the earliest teachers of our School welcomed a new book and read it. Books and journals were few but they were all pure gold and not the nickel coins we have. Some of the medical men of the Madras Establishment were brilliant scholars and clinicians, who had come out to India, not so much in search of a job, as in search of knowledge and new fields of investigation. They were imbued with the spirit of Hunter Brothers and their pupils. They also generously presented their private collections to the library of the new Medical School. The Medical Board which was then the Provincial Authority for medical administration, (like the present Revenue Board for revenue) handed over the Board's library, collected during many decades. In 1867, Dr. Montgomery, the learned Professor of Pharmacology, made a gift of nearly two hundred volumes, comprising valuable works on *Materia Medica* and Botany. The largest and probably the most precious collections came in the form of a bequest from the Madras Medical Society, which gave its library of scientific books together with a sum of Rs. 1500 with two provisos, that the interest of the sum was to be spent on the upkeep of the library and that the books of the college library should be available to the members of the defunct medical society.

As the number of students and the staff and the departments gradually increased and as the old library room became inadequate, the old Octagonal Theatre was extended to the east and converted into a spacious hall to hold a large gathering at the time of the anniversary. Glass almirahs were fitted into the walls of the Hall, which therefore became the library as well as the assembly Hall, with its magnificent Greco-Roman frontage, in the centre of the college compound. The first official catalogue was prepared in 1885, the year of the Golden Jubilee of the institution and the latest catalogue was printed in 1929.

One need not discuss here the details regarding the circumstances or factors that led to the lack of interest in this splendid treasury of books and the subsequent dispersal, disintegration or disappearance of a considerable part of the library. During the last 5 years, various representations

have been made to arrest the loss or decay due to fungus and insects and to preserve some books crumbling to powder, some browned and full of lacuna. Under a scheme of Government of India, some of the old volumes have been dug up from heaps of powder and pulp and petrified masses. Books thus salvaged have been put in separate almirahs and a list has been prepared of volumes that can be identified. There are still some books that require closer study for identification as the title pages have disappeared. Some volumes are in urgent need of treatment by up to date scientific methods for conservation and preservation. Many more books may be still lying unknown above or under the almirahs or in unexpected corners in various rooms.

The object of this brief note to draw the attention of the profession to the rich and varied collection of ancient and modern medical classics of Hipocratic wisdom, invaluable for the post-graduate, the research worker, administrator and medical historian. May I hope that some generous gentleman or lady will make an endowment for the preservation, cataloguing, as well as for arranging instructive exhibits and taking film copies of rare monographs.

Vijaya Dasami
VISAKHAPATNAM }

D. V. S. REDDY.

A. XVIII Century Books.

BAILLIE (MATHEW)—The Morbid Anatomy of some of the most important parts of the human body; by Mathew Baillie, Fellow of the Royal College of Physicians, and Physician to St. George's Hospital. Second Edition, corrected and considerably enlarged. J. Johnson, St. Paul's, London, 1797.

BOERHAAVE (HERMAN)—The Commentaries upon the Aphorisms of Dr. Herman Boerhaave, the Late Learned Professor of Physics in the University of London, Concerning the knowledge and cure of the several diseases incident to Human Bodies: By Gerard Van Swieten, translated into English. Vol. I, 1744; Vol. II, 1744; Vol. III, 1745; Vol. IV, 1754; Vol. XI, 1754; Vol. XIII, 1765; Vol. XIV, 1765.

DUNCAN (ANDREW)—Medical Commentaries, for the year 1786, exhibiting a concise view of the latest and most important discoveries in Medical Philosophy, collected and published by Andrew Duncan. Decade Second Vol. I. 1787; Decade Second, Vol. III, 1789; Decade Second Vol. IV, 1790; Decade Second, Vol. VI, 1792; collected and published by Andrew Duncan, Physician to His Royal Highness the Prince of Wales for Scotland. C. Elliot and T. Kay, Edinburgh.

HUNTER (JOHN)—The Natural History of the Human Teeth; explaining their structure, use, formation, growth and diseases, illustrated with copper plates; By John Hunter, Surgeon to St George's Hospital. J. Johnson, London, 1771.

EDINBURGH SOCIETY—Edinburgh Commentaries.
Vol. IV. 1776.

HENCKEL J. F.—Pyritologia: A history of the Pyrites, the Principal Body in the Mineral Kingdom, translated from the German of J. F. Henckel, Late Chief Director of the Mines at Freiberg in Saxony. A. Millan, London, 1787.

HUXHAM (NJ. JOHN)—An Essay on Fevers, to which is now added, a Dissection on the malignant, ulcerous, Sore-Throat, Fourth Edition; By John Huxham, Fellow of the Royal College of Physicians at Edinburgh, and of the Royal Society at London. J. Hinton, London, 1784.

JO. BAPTISTAE MORGAGNI—De Sedibus, Et Causis Morborem Per Anatomen Indagatis Libri Quinque. Dissectiones, Et Animadversiones, Nunc Primum Editas, Complectuntur Propemodum innumeras, Medicis, Chirurgis, Anatomicis Profuturas. Multiplex Praefixus est Index rerum, et nominum accuratissimus. Tomus Primus Duos Priores Continens Libros. Editio Secunda Ab auctore recognita aqua a mendis omnibus expurgata. Patavii, 1765.

MEAD (RICHARD)—The Medical Works of Richard Mead, physician to His Late Majesty King George II, Fellow of the Royal Colleges of Physicians at London and Edinburgh and of the Royal Society. C. Hitch and L. Hawas, A. Millar, London, 1762.

POTT (PERCIVALL)—The Chirurgical Works of Percivall Pott, Surgeon to St. Bartholomew's Hospital, Vol. I, containing a treatise on ruptures in general, an account of a particular kind of rupture, frequently attendant upon newborn children, and sometimes met with in adults; viz. that in which the intestine or omentum is found in the same cavity, and in contact with the testicle. Vol. II, containing observations on that disorder of the Eye, commonly called Fistula Lachrymalis, Remarks on the Diseases, commonly called, a Fistula in Ane. Vol. III, containing Observations on the Nature and Consequences of these injuries to which the Head is liable from external Violence, Some few General remarks on Fractures and Dislocations. Vol. IV, containing a treatise on the Hydrocels or Watery Rupture, and other Diseases of the Testicle, its costs and

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vessels; (illustrated with cases). An Account of the method of obtaining a perfect or Radical Cure of the Hydrocele or Watry rupture, by Means of a Seton.

(L. Hawes, W. Clarke, and R. Collins, London, 1771).

PERCIVALL (THOMAS)—Essays, medical and experimental. Second Edition, revised and considerably enlarged, to which is added an appendix by Thomas Percival, J. Johnson, London, 1772.

PRINGLE (JOHN)—Observations on the Diseases of the Army; By John Pringle, Physician in Ordinary to Her Majesty. The Fourth Edition, enlarged.

A. Millar, D. Wilson, T. Durham, London, 1764.

SMELLIE (WILLIAM)—A collection of Preternatural cases and observations in Midwifery: By William Smellie, completing the design of illustrating his first volume on that subject. Vol. III, A new Edition.

W. Strahan, T. Cadell and G. Nicol, London, 1779.

Society of Physicians in Edinburgh.—Medical and Philosophical Commentaries, by a Society of Physicians in Edinburgh. Vol. I, Part I, The Second Edition.

J. Murray, London, 1774.

WOODVILLE (WILLIAM)—Medical Botany, containing systematic and general descriptions, with plates, of all the medical plants, indigenous and exotic, comprehended in the catalogues of the *materia medica* as published by the Royal Colleges of Physicians of London and Edinburgh; accompanied with a circumstantial detail of their medicinal effects, and of the diseases in which they have been most successfully employed: By William Woodville, of the Royal College of Physicians, in 3 volumes. Vol. I, 1790; Vol. II, 1792. Vol. III, 1793;

James Phillips, London.

WOODVILLE (WILLIAM)—Supplement Medical Botany, or part the Second, containing plates with descriptions of most of principal Medicinal plants not included in the *Materia Medica* of the Collegiate Pharmacopoeias of London and Edinburgh; accompanied with a circumstantial detail of their medical effects and of the diseases in which they have been successfully employed; By William Woodville, Physician to the Small-Pox and Inoculation Hospitals.

James Philips, London, 1794.

B. Books printed in the first half of XIX Century

ABERCROMBIE J.—Pathological and Practical Researches on Diseases of the Brain and the Spinal Cord. Second Edition, Edinburgh, 1829.

ABERCROMBIE J.—Pathological and Practical Researches on diseases of the stomach, the Intestinal Canal, the Liver, and other Viscera of the Abdomen. 2nd Edition, Edinburgh, 1830.

ABERNETHY J.—Surgical Observations on the Constitutional Origin and Treatment of local Diseases and on Aneurisms. Eighth Edition, London, 1825.

ABERNETHY J.—Lectures on Anatomy, Surgery, and Pathology. London, 1828.

ACTON (WILLIAM)—A Complete Practical Treatise on Venereal Diseases, and their immediate and remote consequences. London, 1841.

ADDISON (WILLIAM)—The Actual Process of Nature in the Living Structure. 2nd series of experimental researches, London, 1843.

ADDISON (WILLIAM)—Experimental and Practical Researches on Inflammation and on the origin and Nature of Tubercles of the Lungs. London, 1843.

ADDISON (WILLIAM)—On Healthy and Diseased Structure and the true principles of treatment for the cure of diseases, especially Consumption and Scrofula. London, 1849.

ARNOLD (THOMAS)—Observation on the Nature, Kinds, Causes and Prevention of Insanity, Vol. 2. London, 1806.

ASHWELL S.—A Practical Treatise on the Diseases peculiar to women. Third Edition, London, 1848.

BELL (CHARLES)—The Anatomy of the Human Body. Vol. III. London, 1803. Vol. IV. London, 1804.

BELL (CHARLES)—Illustrations of the great operations of Surgery, Tropan, Hernis, Amputation, Aneurism and Lithotomy. London, 1821.

BELL (CHARLES)—A Treatise on the Diseases of the Urethra, Vesica Urinaria, Prostate, and Rectum. 3rd Edition, London, 1822.

- BELL (CHARLES)—The Nervous System of the Human Body. Third Edition, London, 1844.
- BELL (CHARLES)—The Hand: Its Mechanism and Vital Endowments as evincing design. Fifth Edition, London, 1852, Sixth Edition, London, 1860.
- BELL (JOHN) & BELL (CHARLES)—The Principles of Surgery as they relate to wounds, ulcers, fistulae, aneurisms, wounded arteries, fractures of the limbs, tumors, the operations of tropan and lithotomy, also of the duties of the military and hospital Surgeon. Vol. I, III, IV, London, 1826.
- BELL (JOHN) & BELL (CHARLES)—The Anatomy and Physiology of the Human Body. Vol. I-III, London, 1823.
- BELL (JOHN)—The Anatomy of the Human Body. Vol. I & II. London, 1802 & 1808. (Respectively).
- BURNETT (WILLIAM)—A Practical Account of the Mediterranean Fever, as it appeared in the ships and hospitals of his Majesty's Fleet on that Station. London, 1816.
- BENNETT J. H.—On Cancerous and Canceroid Growths. Edinburgh, 1849.
- BIRKETT (JOHN)—The Diseases of the Breast, and their Treatment. London, 1850.
- BRANDE W. T.—A Manual of Pharmacy. London, 1825.
- BRODIE B. C.—Pathological and Surgical Observations on the Diseases of the Joints 4th Edition, London, 1836.
- BRODIE B. C.—Lectures illustrative of certain Local Nervous Affections. London, 1837.
- BRODIE B. C.—Lectures illustrative of Various Subjects in Pathology and Surgery. London, 1846.
- BURNS (JOHN)—Observations on Abortion. London, 1806.
- CARSWELL (ROBERT)—Pathological Anatomy, illustrations of the Elementary Forms of Diseases. London, 1838.
- CHEYNE (JOHN)—Essays on the Diseases of Children with cases and dissections. Edinburgh, 1801.

- CHRISTISON (ROBERT)—On Granular Degeneration of the Kidnies, and its connection with Dropsy, Inflammations, and other Diseases. Edinburgh, 1839.
- CHRISTISON (ROBERT)—A Treatise on Poisons in relation to Medical Jurisprudence, Physiology, and the Practice of Physic. Fourth Edition, Edinburgh, 1845.
- COLLES (ABRAHAM)—On the Natural History of Venereal Diseases. 1837.
- COLLINS (ROBERT)—A Practical Treatise on Midwifery. London, 1836.
- COOPER (SIR ASTLEY PASTON)—On the Anatomy of the Breast. London, 1840.
- COOPER (SAMUEL)—A Dictionary of Practical Surgery. 6th edition, London, 1830.
- CROWTHER (BRYAN)—Practical Observations on the Disease of the Joints, commonly called White-Swelling. London, 1808.
- CRUVEILHIER J.—Descriptive Anatomy. Vol. I, London, 1841. Vol. II, London, 1842.
- CURLING T. B.—A Practical Treatise, on the Diseases of the Testis, and of the Spermatic Cord and Scrotum. London, 1843.
- FOX (JOSEPH)—The Natural History and Diseases of the Human Teeth. Third Edition, London, 1833.
- FYFE (ANDREW)—A System of the Anatomy of the Human Body. Vol. I, Third Edition 1814. Vol. III, Third Edition, 1814.
- GAY (JOHN)—On Femoral Rupture: Its Anatomy, Pathology, and Surgery. London, 1848.
- GRAVES (ROBERT J.)—Clinical Lectures on the Practice of Medicine. Vol. I, and Vol. II, Dublin, 1848.
- GUTHRIE G. J.—Gun-Shot Wounds of the Extremities requiring the Different Operations of Amputation, with their after-treatment. London, 1815.
- GUTHRIE G. J.—A Treatise on Gun-Shot Wounds on Injuries of Nerves and on wounds of the extremities. London, 1820.

- GUTHRIE G. J.—A Treatise on Gun-Shot Wounds on Inflammation, Erysipelas, and Mortification, on injuries of nerves, and on wounds of the extremities. 3rd Edition, London, 1827.
- GUTHRIE G. J.—On the Anatomy and Diseases of the Neck of the Bladder and of the Urethra. London, 1834.
- GUTHRIE G. J.—On the Anatomy and Diseases of the Urinary and Sexual Organs, third edition, London, 1843.
- GUTHRIE G. J.—On Wounds and Injuries of the Abdomen and the Pelvis. London, 1847.
- HALL (MARSHALL)—Commentaries, principally on some Diseases of Females. 2nd Edition, London, 1830.
- HALL (MARSHALL)—Observations on Blood-Letting. London, 1836.
- HALL (MARSHALL)—Lectures on the Nervous System and its Diseases. London, 1836.
- HALL (MARSHALL)—Principles of the Theory and Practice of Medicine. London, 1837.
- HALL (MARSHALL)—Practical Observations and Suggestions in Medicine. Second Series, London, 1846.
- HALL (MARSHALL)—Synopsis of the Diastaltic Nervous System. London, 1850.
- HAY (WILLIAM)—Practical Observations in Surgery. London, 1810.
- HEBERDEN (WILLIAM)—Commentaries on the History and Cure of Diseases. London, 1803.
- HOLLAND (HENRY)—Medical Notes and Reflections. 2nd Edition, London, 1840.
- HUNTER (JOHN)—The Works of John Hunter with notes, edited by James F. Palmer. Vol. II, London, 1835. Vol. III, London, 1837.
- JOHNSON (JAMES)—A Treatise on Derangements of the Liver, Internal Organs, and Nervous System, pathological and therapeutics. 3rd Edition, London, 1820.
- JONES (H. BENICE)—On Animal Chemistry in its application to Stomach and Renal Diseases. London, 1850.

- KIDD (JOHN)—On the Adaptation of External Nature to the Physical Condition of Man. London, 1837.
- LAENNEC R. T. H.—Treatise on the Diseases of the Chest and on Mediate Auscultation. London, 1827. Third Edition, London, 1829.
- LATHAM P. M.—Lectures on Subjects connected with Clinical Medicine. Vol. I, 2nd edition, 1845, Vol. II, 2nd edition, 1846.
- LEE (ROBERT)—Practical Observations on the Diseases of the Uterus. London, 1849.
- LEWIS (GEORGE)—Anatomico-Chirurgical view of the Male and Female Pelvis. 2nd Edition. London, 1822.
- LIEBIG (JUSTUS)—Animal Chemistry or Chemistry in its applications to Physiology and Pathology. 2nd Edition. London, 1843.
- LIEBIG (JUSTUS)—Researches on the Motion of the Juices in the Animal Body, London, 1848.
- LINDLEY (JOHN)—Medical and Economical Botany. London, 1849.
- LISTON (ROBERT)—Elements of Surgery. London, 1840.
- LOUIS P. C. A.—Researches on Phthisis, Anatomical Pathological and Therapeutical. 2nd Edition, London. 1846.
- MACCULLACH (JOHN)—An Essay on the remittent and intermittent Diseases. Philadelphia, 1830.
- MORTON (THOMAS)—The Surgical Anatomy of the Perinaeum. London, 1838.
- MURPHY (JOSEPH)—A Natural History of the Human Teeth. London, 1811.
- OWEN (RICHARD)—On Parthenogenesis, or the successive production of Procreating Individuals from a Single Ovum. London, 1849.
- PARIS J. A.—Medical Jurisprudence. Vol. I. London, 1823.
- PARK J. R.—The Pathology of Fever; being the subject of the Gloustonian Lecture. London, 1822.
- PLAFAIR (JOHN)—The Works of John Playfair, Vols. I-IV, Edinburgh, 1822.

- QUAIN (JONES)—The Muscles of the Human Body. London, 1836.
- QUAIN (JONES)—Elements of Anatomy, edited by Richard Quain. Vols. I & II, 5th Editions, 1848.
- QUEKETT (JOHN)—A Practical Treatise on the use of the Microscope. London, 1848.
- RIGBY (EDWARD)—A System of Midwifery. London, 1844.
- REE (HAMILTON)—A Treatise on the nature and Treatment of Hooping Cough, and its complications. London, 1838.
- ROGET (PERTER MARK)—Animal and Vegetable Physiology. Vols. I & II 3rd Editions, 1840. London, 1840.
- ROKITANSKY (CARL)—A Manual of Pathological anatomy. Vol. III & IV, 1850 & 1852, respectively.
- SCARPA (ANTONIO)—Practical Observations on the Principal Diseases of the Eyes. London, 1806.
- SCHWANN (Dr. TH.)—Microscopical Researches into the structure and growth of animals and plants. London, 1847.
- SCUDAMORE (CHARLES)—A. Treatise on the Nature and Cure of Gout and Rheumatism. London, 1819.
- SIMON (JOHN)—A Physiological Essay on the Thymus Gland. London, 1845.
- SOLLY (SAMUEL)—The Human Brain; its structure, Physiology and diseases. 2nd edition, London, 1847.
- STANLEY (EDWARD)—Illustrations of the effects of Disease and Injury of the Bones. London, 1849.
- Stokes W.—A Treatise on the Diagnosis and Treatment of Diseases of the Chest. Dublin, 1837.
- SYDENHAM (THOMAS)—The Works of Thomas Sydenham, on Acute and Chronic Diseases. by Benjamin Rush. Philadelphia, 1815.
- SYME (JAMES)—Treatise on the Excision of Diseased Joints. Edinburgh, 1831.
- SYMES (JAMES)—Principles of Surgery, London, 1842.

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- SYME (JAMES)—On Stricture of the Urethra and Fistula in Perineum. Edinburgh, 1849.
- TODD (ROBERT D.)—The Cyclopaedia of Anatomy and Physiology, edited by Robert B. Todd. Vol. I, Vol. II, London, 1836; Vol. III, London, 1847, Vol. IV, London, 1852. Vol. V, Supplementary, London, 1859.
- TODD (ROBERT BENTLEY) & BOWMAN (WILLIAM)—The Physiological Anatomy and Physiology of Man. Vol. I & II, London, 1845, 1846, respectively.
- VEGEL (JULIUS)—The Pathological Anatomy of the Human Body London, 1847.
- WEDD (WILLIAM)—Mems. Maxims, and Memoirs. London, 1827.
- WAGER (RUDOLPH)—Elements of Physiology, for the use of students London, 1844.
- WARDROP (JAMES)—On Blood-Letting, An account of the curative effects of the abstraction of blood. London, 1835.
- WATSON (THOMAS)—Lectures on the Principles and Practice of Physic. Third Edition. Vol. I & II, London, 1848.
- WATT (ROBERT)—Cases of Diabetes, Consumption etc. with Observations on the History and Treatment of Diseases in general Edinburgh, Paisley. 1808.
- WELLS (WILLIAM CHARLES)—Two Essays. One upon single vision with two eyes, the other on dew. London, 1818.
- WILSON (ERASMUS)—On Diseases of the Skin. 2nd Edition, London, 1847.
- WILSON (ERASMUS)—The Dissector's Manual of Practical and Surgical Anatomy, London, 1853.
- WILLAN (ROBERT)—On Cutaneous Diseases Vol 1, London, 1808.
- WINSLOW (FORBES)—The Case of Luigi Buranelli, Medico-Legally considered - London, 1835.



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