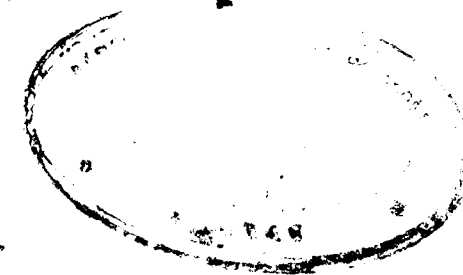


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The Madras
Medical College Magazine



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Vol XXI

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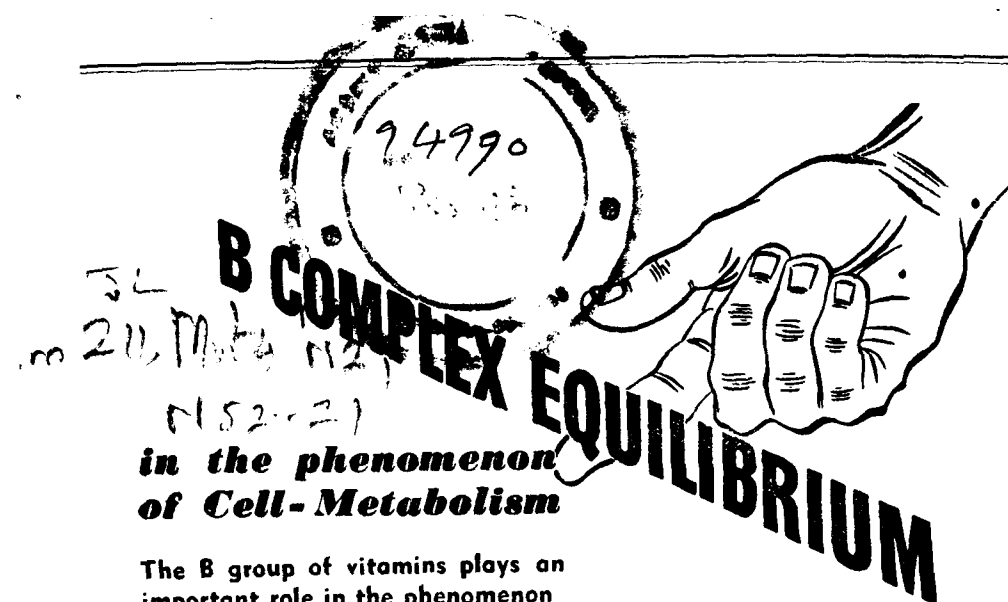
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Miss F. N. N. N.

"Ah, Moon of my delight who knowest no wane
 The moon of Heaven is rising once again
 How oft hereafter rising shall she look
 Through this same garden after me—in vain!"

Editorial

THE year has been an eventful one. When momentous issues are at stake and history is perhaps being made, we are content to play the humble role of the chronicler.

That medical education needs reform seems to be a proposition with which all are in agreement but when it resolves into a question of ways and means, the sweet agreement yields place to a medley of arguments and opinions. Certain recommendations have been made by the University Committee. Life with bones and frogs for the freshers is to be shorter by six months. Hygiene which, in the recent past, achieved some importance (and a new building too) loses its independent existence and crouches under the broad wings of Medicine. Recognition is now accorded to the fact that the eye is after all only a part of the body. Compulsory practical training for a year and a half stretches ahead of this 'shorter' course. There may be much that is welcome and more that we miss in these. "Standards or Speed?" "Short and sweet or long and arduous?" These are the questions posed and controversy has been the result. While educationists and politicians fight their battles, we wish the students should take more interest, discuss these matters of vital import and give expression to their hopes and needs.

Postgraduate education in the past has almost been synonymous with going abroad. There has been a crying need for institutions in our country to improve the sadly neglected postgraduate education and to give a fillip to research. The dreams have come true with the setting up of the upgraded institutes. A better and happier choice could not have been made than Dr. R. V. Rajam for Venereology, Dr. Anantanarayana Ayyar

TO FOLLOW
KNOWLEDGE
LIKE A SINK-
ING STAR...

for Anatomy and Dr. R. K. K. Tampan for Obstetrics, all of whom are international figures in their fields of study. It is a matter of great pride to us that all of them have long and intimate associations with our college. We are confident the institutes will march into fame under their able guidance and perhaps the days are not far off when we welcome to our shores students from other lands for higher studies.

EXPANDING HORIZONS... When enthusiasm runs high, it breaks through its narrow confines and carves for itself newer outlets. Elsewhere in this Journal we have presented the reports of the Students' Clinical Society and the Medical Relief Wing, the two new babies of the year. They are eloquent tributes to the enthusiasm of the students and staff alike and we are no idle dreamers when we see in our mind's eye these infants growing into Herculean manhood. The Clinical Society is a pioneer in the field among our sister institutions. Whether presenting cases or discussing and analysing them, the students seek the platform as the whetstone of thought and expression. The enthusiastic response that has been achieved promises a great future. "Go to the villages" still continues to be the most popular slogan hurled at us. There seems to be no attempt to mask the underlying presumption that the modern medical student is incapable of doing so. The Rural Medical Relief Wing gives the lie to this myth. The eagerness of the students and the confidence of the villagers conspire to make the Wing soar to greater heights.

MANY HAPPY RETURNS... We learn that Lt. Col. C. R. Krishnaswami, M.S., one of our beloved surgeons, is due to retire shortly. C. R. K. needs no introduction to those who have had the privilege of coming under his influence. A perfect gentleman, kind hearted and with a fatherly affection to the students, outstanding for his utter sincerity and strict sense of discipline; as a Surgeon, bold and confident, as a teacher, a storehouse of practical wisdom—one can add on and yet fail to reach to the core of why he was so endearing. The most remarkable aspect of C. R. K. is that he is, at his age, dynamic and enthusiastic. One feels sad that the corridors of the hospital will resound no more with those firm strides of his which age has not withered. Many happy returns to you, Sir, and in the long peaceful years to come, remember us.

WARM WELCOME... We are proud to welcome Dr. A. Venugopala Mudaliar, M.S., as a Surgeon in the place of Dr. C. R. K. He is already well known to us for his overpowering eloquence and attractive facility of expression. We are sure he will carve out an eminent name for himself like his worthy parent, Sir A. L. Mudaliar. We welcome Dr. M. R. Natarajan, M.D. as our Lecturer in Bacteriology. His kind attitude and cheerfulness have made him a worthy successor to Dr. S. Govindarajan, M.D., who has gone abroad for higher studies. Dr. P. Ratnaswamy, B.A., M.D., has been for sometime now in his new office of Vice Principal of the College. As an able administrator and one keenly interested in the welfare of the students, he is sure to prove himself very popular.

MORE CHANGES... As we go to press, we hear of more changes among the surgeons of our hospital. Lt. Col. D. S. Iyer, M.S., F.R.C.S., our Professor of Operative Surgery, is transferred to the Stanley Medical College. While it is a great loss of a good teacher to the students, it is a greater blow to us. As Vice-President and Treasurer of the Magazine Committee all these years, he has been a valuable source of encouragement. We have always been indebted to his guidance and advice and it will be hard to replace him. Dr. M. Krishnamurthy, M.S., our new Professor of Operative Surgery, needs no introduction to us. Within the brief span of a year, he has earned for himself a permanent place in our affections and will continue to reign there for a long time to come. We welcome proudly Dr. Sadasivam, M.S., as one of our Surgeons and our new Professor of Principles and Practice of Surgery. That all the students should regard this as a matter of personal pride is eloquent tribute to his popularity and high esteem. We have found him always helpful, encouraging and untiring. He has conquered us by his smile and winning manners ("Certainly, Doctor"). To his valuable teaching so many of us are grateful and it is a wonder that one can teach so many, so clearly and so fast. We congratulate him on his well-merited and long-awaited promotion and wish him a very bright future.

Though punctuated with occasional excitement, life goes on, much in the same old fashion. The men students still plead for a new hostel, and the Editor still wishes for more of students' contributions.

A. Varadarajasundaram.



Sitting (L. to R.)—Mr. A. Varadarajasunderam, B.A., (Editor),
Lt.-Col. D. S. Iyer, M.S., F.R.C.S., (Vice-President).
Standing (L. to R.)—Mr. V. Krishnamoorthy Reddy, (Associate Editor),
Lt.-Col. C. K. Prasada Rao, M.D., (President),
Mr. S. R. Krishnaswamy, B.Sc., (Publisher).

Use of some modern Therapeutic agents in Pediatrics

Dr. V. ISWARIAH,
B.A., M.B., M.R.C.P., F.R.F.P.S.

So few drugs are necessary in treatment in Pediatrics that the Specialist is not alarmed of Pharmacology but a decent number of therapeutic accidents reported are in the direction of either failure of treatment due to inadequacy or catastrophes due to over-enthusiasm with drug therapy, that even a Pediatrician may need to have wholesome respect for Pharmacology.

A preliminary word about dosage of drugs in children may not be unwarranted. It has been noticed, after experience with some of the recent therapeutic agents, that dosage schedule arrived at by time-honoured conventions like Young's formula, Clarke's rule or Dilling's provide a comfortable margin of safety for most drugs, but are deemed much below the minimum effective level as exemplified by sulpha compounds and antibiotics and even the older drugs like salicylates and barbiturates. Pediatricians are today working for a new surface area principle for effective dosage. This principle is being perfected during the past year or two.

Chemotherapeutic agents: Since the advent of chemotherapy, in particular sulpha compounds and antibiotics, treatment of disease of children has progressed by leaps and bounds. The change in outlook has been most profound. From 1900 to 1940 or about, the accepted view was that treatment of infections in children involved first the finding of the small causative agent and second, producing an antiserum in a large animal. Apart from tetanus and diphtheria, antisera seem to have a second place today in treatment of infections. Sulpha compounds are not less to be respected than antibiotics. The vast epidemic of meningococcal infection which marked the outbreak of the last war in Britain and even the subsequent H. Influenzal meningitis treated with sulpha compounds and chloramphenicol are said to have reduced mortality from 75% to 10%.

Widespread prevalence of dysentery in this country, sometimes resembling cholera, is speedily controlled by sulpha drugs. We now have a chemotherapeutic agent capable of combating almost every bacterial disease. Whooping cough according to some still remains unconquered while others claim very gratifying results with chloramphenicol or terramycin. *B. proteus* and *Ps. pyocyaneus* that resisted so far are said to be favourably influenced by Neomycin. Virus of poliomyelitis remains unconquered. The list of victories is impressive and deserves repetition. Sulpha compounds over meningococci, pneumonia, urinary infections, dysentery group; penicillin over staphylo and streptococci and more varieties of pneumococci, barring virus; streptomycin over tuberculosis, plague: Chloramphenicol over typhoid, typhus and presumably pertussis Aureomycin in addition to the many listed above, over many viri and endamoeba histalytica.

Two points deserve mention here: (1) Failure to secure satisfactory results in children with sulpha drugs is not infrequently due to insufficient dosage and for want of maintenance of optimum blood level for a required time. This applies mainly to sulpha group of drugs. Children differ generally in tolerance to certain drugs, that hard and fast rules for dosage cannot be laid. It is known that Belladonna compounds are well borne by children, against opium and strychnine. Amongst modern drugs sulpha compounds are well borne by children as against antihistamine compounds that are not. Some need dosages to be gradually worked up, testing sensitivity and tolerance. Sulphonamides therefore need to be administered in effective dosage; certainly not oblivious to their toxic potentialities.

(2) The next important point to be borne in mind is that the materials we now have affect bacterial life. If bacteria were to be found in human body only during diseases, to kill them would be good always. But we all carry, particularly children, in our nose, throat, bowel a microflora which, it would not be too fantastic to suggest, is of the greatest importance to health. An antibiotic to a patient means in effect that we sterilise his nose and throat in 6-24 hours, the organisms of the gut in 48 to 72 hours and so on. Such a change is unnatural, for nature seems to dislike a vacuum. It is therefore not an unnatural effect of this change, that other bacteriae should enter to take the place of those that have left. Under these conditions, the predominant faecal flora may become fungal. It has been observed, that although fungi can be grown infrequently from the faeces of children with pneumonia on admission to a hospital, they are almost invariably found after treatment with antibiotics like aureomycin and terramycin. In many cases the sputum produces considerable growth of monilia. In an editorial by Lancet (June 21st 1952 p. & J. A. M. A.) danger of moniliasis sometimes fatal after overenthusiastic treatment with antibiotics was recently brought to notice of medical men. It is said that

in America today, the flora of throat in children is predominantly monilial and deaths from monilial infections are reported and are said to be on the increase. It is not surprising that some gloomy physicians therefore forecast a short span of life for antibiotics in therapeutics; that they may produce perforce a change in the host i.e. vitamin deficiencies due to lack of one or other of the B complex or vitamin K lack, as all these vitamins are biosynthesised in the gut. In time a changing pattern of infectious disease will be encountered.

But this apart: The present status of sulphadruugs in paediatrics may be outlined. Sulphadiazine seems to be the compound of choice in acute febrile illness presumed to be due to pyogenic cocci, *H. influenza* in respiratory tract, *E. coli* in urinary tract. Adequate fluid intake with soda bicarb helps in the prevention of many complications. About 1.5 grs. per kilo daily, divided into 5 or 6 doses for 4 to 5 days may be necessary, even if the fever is brought down after 24 hours of treatment. Blood examination for possible reduction of leucocytes, watch for measly rash and cognisance of drug fever are essential. Elkosin or 6.p amino benzene sulphonamide is said to be well tolerated by children; said to be excreted mainly unchanged in the Urine. Children treated for meningitis stood the drug well.

Gantrisin or 3.4 Dimethyl 5 sulphanilamide has also been found useful in children for lobar and bronchopneumonia, suppurating otitis, cervical adenitis and urinary infections. Its high solubility in the urine is a point of importance in its favour as addition of soda bicarb may not always be necessary.

Sulpha combinations are now the fashion. Sulphadiazine and *S. merazine* with *S. thiazole* as the third component are favoured by many. The danger of sensitisation from combined partial doses of more than one is much less than an equal quantity of one compound used. Lately, sulpha drugs have come to prominence as a prophylactic against acute rheumatic fevers. In reducing chances of rheumatic fevers in children prone to upper respiratory infections, a small daily dose of a sulpha compound for a fairly prolonged period has been advocated by some. Although throat cultures of children so treated showed reduced haemolytic streptococci than those not so treated, the scheme is not without its risk. This prophylaxis is being replaced by penicillin lozenges or aerosol in case of respiratory affections in children.

Trends in Antibiotics: One would like to refer to trends in the therapy with Antibiotics today, as they seem to beckon us to halt, to pause and to ponder. The trends could be noted under the following heads:

(1) What is the therapeutic active level? (2) Is that level constant for all infections? (3) What happens if the blood level is much higher than is necessary? (4) Should the blood level be maintained at an optimum for a required period, or could it be interrupted *i.e.* Continuous versus discontinuous therapy (5) Antibiotics and bacterial resistance (6) Synergism and Antagonism in antibiotics.

(1) **What is the therapeutic active level?** It is increasingly apparent that blood level, high or low, is *not* often identical with therapeutic active level. Other considerations than mere blood level are tissue depots susceptibility of organisms, bacterial recovery period etc. Storage of penicillin varies with tissues; long after penicillin has disappeared from blood, it may be stored in some remote tissue where it is wanted. Some organisms are readily susceptible, while others like *treponema* tend to recover from the first attack. It used to be said that 0.2 units per c.c. of penicillin is necessary for most infections. Confirmation of the wastefulness of large doses as much as futility of small doses is obtained from the works of Eagle (1949) who treated experimental syphilis under different conditions of dosage. He concluded that doses too large may be just as wasteful as those which are too small. Length of action at relatively low concentrations, provided it is in therapeutic range is much better than multiple peaks much higher than the therapeutic range.

(2) **Is the blood level constant for all infections?** A categorical answer is possible here: blood level is not only *not* constant for all infections but even for the same infections, it may not be constant. The reason for this leads to the consideration of an important aspect in drug treatment. Tissue fluid concentration is very different from blood concentration. In localised diseases, local tissue concentration is of greater importance than blood level. It has been shown in dogs that a titrable level of penicillin persists in lymph considerably longer than in blood. When tissues are damaged experimentally, say by injection of turpentine, a greater concentration of penicillin is noticed in the damaged tissues. Similarly in a diseased organ, a greater concentration of penicillin and that for a longer time is noticed. (One is not here thinking of special compounds like ester of penicillin that is said to be in higher concentrations in the lung than in other tissues.)

This accumulation in diseased tissue is in accordance with the requisite for a good chemotherapeutic agent as envisaged by Paul Ehrlich, *i.e.* it should have a focal or magic bullet like action, going straight to the target in preference to other tissues not diseased. Blood level alone may be a determining factor in septicemias presumably.

(3) **What happens if blood level is much higher than is necessary?** As much as 0.5 unit per c.c. of penicillin for 7 to 10 days continuously did not do any harm or damage to the host. Herein lies the superiority of penicillin over the sulpha compounds *i.e.* in having maximum parasitotrophic and minimum organotrophic action as envisaged by Ehrlich for an ideal chemotherapeutic agent. But, this very fact enjoins a note of warning. Apart from the physiological inertness of most antibiotics, tempting medical men thereby to indulge in wasteful extravagance, newer data seem to preclude every high blood level. Increasing the concentration of antibiotic above therapeutic necessity is not merely wasteful, but higher concentrations may even retard the healing process by not having bacterial effect. The older view, more the merrier, the higher the blood concentration the better the effect or if a little is good more will be better, is no longer valid. Reference will be made to this again under synergism and Antagonism of antibiotics.

(4) **Should blood level be constant or interrupted? *i.e.* Continuous or Discontinuous therapy:** This has been answered in conflicting ways. As observed, blood infection may need maintenance of optimum blood level, but in organic or localised infections, tissue concentration is the determining factor. Tissue concentration may sometimes be for three times as long a period after one injection as blood concentration. It is therefore possible to raise tissue concentration, the diseased tissue in particular, to a desired level independent of duration of blood level. In other words, it is possible to treat many clinical conditions by intermittent treatment, not ensuring a constant blood level for a definite period. The exceptions to this are possibly septicemias and cerebrospinal infections where such high concentrations as in other tissues may not be possible. Thus we are led to accept the interrupted or discontinuous therapy with antibiotics. Clinically, discontinuous therapy has been tried in many conditions with results comparable or superior to continuous therapy by the tick of the clock. The earlier conception of constant blood level for a certain period was responsible for much effort in devising methods that would permit prolonging the duration of blood levels, at the same time reducing the necessity for frequent injections, not to speak of continuous drip. Products for producing constant blood level for 12, 24, 48 and 72 hours were prepared *i.e.* procain penicillin, procaine penicillin in oil or beeswax, procaine penicillin in oil with aluminium monostearate etc. Today the trend is away from continuous therapy, employing one or two relatively massive doses of aqueous penicillin. Clinical efficacy of a single large dose is better than would appear from considerations of blood level. Further it is not recognised that penicillin may exert "residual" effect in animals. Blood and other body fluids may be unsuitable media for growth of bacteria for sometime after detectable

concentrations of penicillin are no longer present. Following exposure to an inhibitory concentration of penicillin, bacteria require a "recovery period" if not dead, before they can resume growth, even if they are in a medium that would normally be suitable for their multiplication. Discontinuous therapy has been accepted as a routine in most hospitals in U. S. A.

Let not this be misconstrued as advocating nonchalant treatment. Although it is not necessary for penicillin to be present in the blood continuously, the interval between doses i.e. the period during which the concentration of antibiotic is below the normal effective level, must not be sufficiently long or must not recur frequently to permit resumption of bacterial growth. The analogy is that of a boxer who can continue to punch his adversary when he is down as against one who waits until he is just ready to stir and then hit. The aggressor can afford to rest when the enemy is down but not long enough to permit the man who is down to regain strength. This is also economical. This same principle is also accepted for streptomycin in tuberculosis—a 2 Gm. biweekly is said to be better than 1 Gm. daily.

(5) **Resistance to Antibiotics:** How strains of organisms initially sensitive emerge ultimately resistant is receiving attention everywhere. Mutation, natural selection, adaptation have all been proposed. Fortunately clinical experience indicates that development of penicillin resistance does not occur so commonly experiments in vitro. It is also a hopeful sign that resistance is achieved often at the expense of aggressiveness and at the price of ability to multiply rapidly. But streptomycin vis-a-vis tuberculosis seems an exception. Streptomycin resistance could develop, it is said, in all organisms in 20 generations and the drug will have diminished usefulness in future. Only these organisms conveyed to man by animals e.g. plague, it is thought, will be amenable to streptomycin.

Resistance to chloromycetin, aureomycin and terramycin could develop both in vitro and in vivo to a moderate extent and when it does occur, it looks as though the three are embraced to some extent i.e. organisms resistant to one will also be resistant to the other two to varying extent.

The prospects as envisaged by these observations are that staphylococci, intestinal group of organisms and tuberculosis might gradually become less and less amenable to treatment by resources at our disposal today. The elusive microbe defies subjugation.

A strange corollary to acquired resistance to antibiotics is the peculiar phenomenon called bacterial dependance. Varied degrees of dependance of tuberculosis organism for streptomycin are reported. The organisms in other words seem to require the antibiotic for their growth. Streptomycin dependant bacteriae have a peculiar metabolic need which apparently can be satisfied only by a liberal supply of streptomycin dependant in the presence of a para amino salicylic acid. These are indeed gloomy forebodings: if a vaccine could misfire, one should be prepared for antibiotic aggravation of diseases.

(6) **Synergism and Antagonism of antibiotics:** This is a new study that promises to have far reaching consequences. It is an axiom that two or more chemotherapeutic agents acting together may produce better effects than one as exemplified in the treatment of amoebiasis or syphilis. The effect of combination may be additive or synergistic, the gap in the one being filled by the other. The object of polyantibiotic therapy is to bring to play concomitantly or successively two or more antibiotics that will act in different ways. If a resistant member of a bacterial population can stand frontal attack by one that is usually effective for most of the cells, those resistant cells may have to encounter a lateral attack by another antibiotic. Two antibiotics that affect two different links in the chain of bacterial metabolism are better than one. To illustrate, if penicillin blocks depolymerisation of mononucleotide, streptomycin intervenes in the depolymerisation of nuclei acid macromolecule. The one escaping metabolic attack at one end, falls at another end. But, this logic is not always true in antibiotic practical politics. Polyantibiotic therapy can be less effective than mono-antibiotic therapy. For instance, if penicillin and streptomycin synergise each other in the treatment of streptococci involved in bacterial endocarditis, penicillin and chloramphenicol antagonise each other in infections due to haemolytic streptococci. In mice infected with streptococcus pyogenes, mortality after treatment with penicillin and chloramphenicol was three times as much as those treated with penicillin alone. A bacteriostat like chloramphenicol or aureomycin, if combined with a bactericide like streptomycin or penicillin, the effect is not additive or synergistic but rather nullifying or antagonistic. It looks as though pharmacologically and chemically dissimilar substances, are capable of being combined in treatment rather than allied substances, though penicillin and streptomycin have so far got on well. Streptomycin and PAS synergise very well so far. Yeast tends to reverse the effect of penicillin. Sulpha compounds seem to synergise penicillin so far. Use of oral sulphadiazine with parenteral penicillin has been advised as a routine for treatment of meningitis due to pneumococci, streptococci and H. influenza, empyema, various forms of pneumonia, lung abscess, gas gangrene and fulminating meningitis. Joint use of sulphadiazine and

streptomycin is said to be much more effective in brucellosis. It should also be said that one member of the sulpha group synergising an antibiotic does not mean any uniform assurance for other similar combination. At present there is no infallible way to predict whether the effect of a given combination of antibiotics is to help, add or undermine each other. In the field of antibiotic therapy one cannot entirely rely on induction or logic. In trying to be too logical and scientific in therapy, one may be original or aboriginal. The vagaries of living organism are numerous, peculiar and unpredictable. The only sure test is trial and verification; trial being empirical. Results of in vitro findings cannot be readily transferred to human needs.

The results of all these reports of polyantibiotics, synergism, antagonism, joint use of other medicaments, resistance, dependance, all seem to emphasise the cardinal fact that the reaction system comprising *host*, *pathogen* and *drug* is most complex and is easily altered by even slight changes in the internal or external conditions of either the host or the invading pathogen.

ANNEXE

Recently a strange trend in Antibiotics has been brought to light. Experiments on piglings and chicks fed on normal diet showed that addition of Penicillin or Aureomycin to the diet, showed a significant increase in rate of growth. Neomycin and Chloramphenicol had less pronounced effect. The effect was more perceptible when all-plant diet was given as against mixed diet of animal origin. Antibiotics injected however showed varying results—smaller doses injected showed results similar to oral administration while bigger doses had no appreciable effect. Streptomycin injected or orally administered also accelerated growth in chicks.

Fleming, the discoverer of Penicillin, in a symposium on antibiotics observed that very little is talked of the remarkable growth stimulating property of penicillin and perhaps all antibiotics. He illustrated his observation with turkeys fed on antibiotics. The value of penicillin in some anaemias is getting light by these observations. Here we see antibiotics assure a new role of being tonics.

Penicillin and Aureomycin: In vitro studies have revealed that penicillin is 80 times as effective as aureomycin in inhibiting growth of beta haemolytic streptococci and hence the drug of choice. But many have reported satisfactory response to aureomycin of tonsillitis, sinusitis, erysipelas, peritonitis, streptococcal pneumonia etc. Comparative clinical

studies have shown aureomycin better in some cases than penicillin but ineffective in eliminating streptococci from the throat. Hence some paediatricians feel that though penicillin is often the drug of choice, aureomycin may be indicated in others, specially those sensitive to penicillin. Improvement with aureomycin may be rapid; but if discontinued after 5 days, clinical and bacterial recurrence may be frequent. The recurrent attacks may however be mild. Bacteriological recurrence may be unaccompanied by clinical symptoms. A second course of aureomycin was as effective as the initial course. It is said that aureomycin does not interfere with antibody response of the body tissues. Toxicity is minimal; diarrhoea that accompanied the earlier brand of aureomycin is now infrequent. So far there is no evidence of serious resistance and sensitisation. Longer initial course is being tried to prevent relapses. Americans prefer Terramycin orally for most infections in children, because it is easily administered. For pneumonia, penicillin is the antibiotic of choice according to Medical Research Council Report.

I should like to turn your thoughts to three groups of compounds disconnected though used in paediatrics. They are (1) Cortisone and ACTH (2) Streptokinase and Hyaluronidase and (3) Antivitamins.

Cortisone and ACTH: These compounds are today in boom for ailments all and sundry.

The exact dosage for children remains unsettled. About 10 mg. for a year old child divided into four injections seem satisfactory. A child aged 5 to 10 may get about 40 mg. in four divided doses while a child of ten may get as much as 60 to 100 mg. a day divided into four doses. Oral administration of 25 mg. tablets twice or thrice a day is also getting popular.

With ACTH an adequate dose is said to be the minimum required to reduce the number of circulating eosinophils to near zero figure. An initial amount could gradually be increased until the desired effect on eosinophils was obtained. Should there be increase of body weight oedema, hypertension, fall in urinary output, reduction of urinary chloride or serum potassium, one gets an indication of toxæmia. It is also said that the usual dose of cortisone is thrice the amount of ACTH. A reduction of circulating eosinophils is not necessary for gauging the effectiveness of cortisone unlike ACTH. One must be alive to many prominent though less pronounced side effects like delay in wound healing, disturbance of glucose tolerance, masking of normal signs of inflammatory reactions, possible stimulation of latent tuberculosis etc. Retardation of growth in children noted if more than per kilo is given. Recently a strange complication

was encountered *i.e.* increased intravascular clotting with thrombi in lung. Pathological fractures after cortisone treatment due to osteoporosis are recorded. Though malignant hypertension has not been noticed in children, this does not mean that blood pressure records are to be ignored when under therapy with these compounds. In rheumatic conditions in children, complications like pericarditis, and nephrosclerosis are said to be avoided by 25 mg. of cortisone acetate as tablets b.d. or t.d.s. (oral). In arthritis in children, after about 48 hours of treatment with cortisone passive movement was possible and in 72 hours increased mobility accompanied considerable reduction in swelling. Erythrocyte sedimentation often returned to normal, cyanosis and dyspnoea disappeared, count returned to normal. By virtue of its salt and sodium retention properties (more marked with ACTH) and in the presence of cardiac impairment congestive heart failure may be precipitated. But by low sodium diet serious side effects could be avoided if taken up at the first sign of congestive failure. In nephritis, oedema and ascites often disappear in about 3 to 6 days and blood biochemistry tends to return to normal. The shortage of the compound led to an interesting economic finding the cortisone could be synergised with para amino benzoic acid. Recent findings seem to suggest that Kendal's F compound or hydrocortisone is more effective than the original E compound or 11 dehydrocortisone.

Streptokinase, Streptodornase and Hyaluronidase: It was observed long ago that broth cultures of beta haemolytic streptococcus group A had a peculiar lytic factor which rapidly lysed fibrin in clots. This lytic principle *i.e.*, streptokinase is of the nature of a catalyst which activated a ferment in euglobulin fraction of human serum. Yet another called Streptodornase, desoxyribonuclease, is also said to present. Both are without any appreciable action on living tissues, but could be made to hydrolyse fibrin and pus. By removing clot and pus, it is thought that the pathological zone was cleansed for healing by granulation. This is the surgeon's aspect. Physicians attempted to extend its application to remove or lyse intravascular clot or break down adhesions in pleura and meningeal spaces. Their evolution in therapy is watched with bated breath and not without diffidence.

In tubercular empyema, thick pus is said to be liquefied, thereby facilitating drainage. In haemorrhage following pneumonectomy blood clots are easily removed to prevent pocket formation. Antibiotics could be added to it to prevent sepsis. In tubercular meningitis as well, it has helped to clear and cleanse meningeal space. When streptomycin was used intrathecally, the injection sometimes caused irritation of meninges and often a blockage occurs round the lumbar cord. This may necessitate ventricular route above.

Often as a combined effect of the disease and the treatment, fibrin tends to be deposited round the brain stem, threatening fatal hydrocephalus. Streptokinase added to streptomycin before injection is said to minimise the risk and enhance the therapeutic value. Salts of streptomycin containing calcium however are contraindicated as streptokinase is finally eluted in phosphate buffer. A new measure is therefore available for serous cavity infections. Allied to this novel therapeutic weapon is Hyaluronidase, another enzyme also called natural spreading factor. Today it is obtained from bovine testis. It is also found in snake venom, bee extract, leech, spider etc., to permit spread of venom. The main action of hyaluronidase is hydrolysing hyaluronic acid, a polysaccharide found in intercellular ground substance of connective tissue. Hyaluronic acid helps to set or harden intercellular matrix, while hyaluronidase prevents this by loosening or softening cement substance. Like the 'catalytic lytic' principle of beta-haemolytic streptococcus (A) hyaluronidase is also produced by some streptococci while those with a capsule have hyaluronic acid which tends to resist hyaluronidase activity.

When hyaluronidase is administered with an intravenous injection, it prevents localisation and hastens spreading by loosening the matrix. Local anaesthetics in combination with hyaluronidase lose their anaesthetic property to a great extent as they are no more localised. One may say that hyaluronidase to local anaesthetics is the antithesis of adrenaline which potentiates local anaesthetics by localising them. Hyaluronidase is also said to promote permeability of nerves to toxic material. It is even thought that malignant metastasis is due to the activity of hyaluronidase. Salicylate therapy in rheumatic fevers is thought to exert its action by antagonising hyaluronidase, thus preventing permeability, porosity and fragility of connective tissue. General pharmacological study of hyaluronidase with reference its toxicity, effect on kidney, heart, blood forming organs etc. show that the agent is not harmful to the normal physiology of the human system to any gross extent.

In Pediatrics, hyaluronidase is said to be of value for hypodermoclysis, by including it with the material administered. In the treatment of dehydration in children, one milligram of hyaluronidase freshly prepared in distilled water 1 c. when added to the perfusing fluid, 200 c.c. of glucose saline could be administered in less than 20 minutes. It may be repeated if necessary. Procaine penicillin and streptomycin administration are said to be facilitated by adding hyaluronidase. It was estimated that streptomycin absorption rate was reduced from 60 minutes to 7 minutes by adding hyaluronidase. Plasma absorption was also hastened.

Anti-Vitamins: Biological antagonism and substrate competition of allied drugs have provided impetus for much pharmacological study. Folic acid antagonists, antihormones and antivitamins are heard of much these days. It was noticed in study of malignant tissue with experimentally transplanted sarcomas of mice, that growth of tumour was arrested by or progressed with folic acid concentrates. When human beings with cancer were administered folic acid derivatives, a marked subjective feeling of well being was noticed, i.e., pain reduced, leading to withdrawal of analgesics. Teropterin and diopterin, two folic acid derivatives were prepared and used. But a further puzzling finding was that folic acid derivatives in some cases accelerated the condition of malignancy. This was specially noticed in leukaemias. Hence antifolic acid compounds were tried. Remissions were noticed in over 5% of cases of controlled study. One has to be guarded in assessing these figures, as natural remissions are not infrequent. Aminopterin and methopterin - the latter being less toxic and more active (Aminopterin is 4 aminopteroylglutamic acid.) Analogues of pteroyloglutamic acid are expected to exert a biological antagonism to the parent substance i.e., folic acid on the principle of substrate competition. No less than 40 of these analogues have been prepared and studied of which Amethopterin and amino phenyl aspartic acid are said to be of value. All these have an inhibiting effect on *L. casei* in media containing folic acid. They induce folic acid deficiency states when administered to animals. It is said that amethopterin has so far yielded significant results in prolonging life in leukaemias, at least in mice. In children temporary remissions in myeloblastic and monocytic leukaemias are noticed. Acute lymphatic leukaemias in children are also said to respond fairly well. It is administered in 1 mg. doses daily for 3 or 4 days for a child from 4 to 10. A strict watch over blood picture is essential. Toxic symptoms include vomiting, diarrhoea, ulcerative stomatitis, alopecia, jaundice and in severe cases aplastic anaemia and tendency to bleed due to hypoprothrombinaemia. Often these drugs raise hope but damped when relapses occur. Let me conclude. Some of the views presented here may have confused some and confounded others. They may feel that Pharmacology is shifting ground. To them I may be permitted to address the words of Fredriche Nietzsche—"Doubts, objections, uncertainties, paradoxes, evasions, distrusts and reverses are signs of Health and life. Everything absolute, definite and finite belongs to Pathology".

—By the kind Courtesy of the Editor, Indian
Pediatric Journal Calcutta, and the author.

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Some Aspects of the Nervous System

Dr. P. RATNASAMY, B.A., M.D.

IT is not my intention here in this article to go elaborately into the Anatomy and Physiology of the Nervous System. Neither is it my intention to deal with specific systems in the Nervous Systems. It is my object here to stress one important aspect of the Nervous System which is peculiar to itself and not shared by any other system like the Cardio-vascular or the Gastro-Intestinal system, I mean the integrative function of the Nervous system.

Man, if he is to survive as a species, must have and does have fundamentally the instinct of self-preservation. Unless this fundamental instinct is assisted by a central mechanism, the "Homeostasis" cannot be achieved. The species of any animal including man cannot survive if it cannot adopt itself (1) to the external environment and (2) cannot maintain what Claude Bernard has called the constancy of internal Milieux. Hence the process of internal and external adaptation to environment should be achieved by a central controlling system, and this is what is achieved by the Central Nervous system. To elaborate this idea I will give you an example. Unless Sensory system is alert to all the environmental changes, it cannot give rise to reactions which will be protective. Thus, for example, if a man sees a Cobra or a Tiger, the sensory impressions are carried to the Central Nervous System where, in association with previous experience, the danger of the situation is brought to the individual and the whole body is poised for instant action of flight or fight. Unless this situation is integrated at the highest level the muscles, the liberation of Adrenaline, the out-pouring of Glucose cannot be simultaneously achieved. Therefore it is that the sensory system has three components, the exteroceptive, the Proprioceptive and interoceptive. The Teloreceptive component is very important and is placed in the leading segment of the body namely, the Head. To attain the constancy of the internal Milieux, Hypothalamus is brought into close relationship with the Endocrines especially the Pituitary which is directly below it. Thus the Vaso-sensory motor mechanism viz., the Sympathetic and parasympathetic are brought into close relationship with the chemical nature of the blood which surround the cells of the Hypothalamus and Histology shows how the cells of the Hypothalamus are almost like islands floating

in pools of blood. The changes in the composition of the blood thus perceived by the cells of the Hypothalamus are brought into close relationship with the sympathetic and para-sympathetic centres in it and the result is harmonious adjustment of the internal Milieu of every cell in the body. The Hypothalamus, acting through the Pituitary, which in turn leads the Endocrine Orchestra, brings the endocrine system into harmony with the Vegetative Nervous System. The cells by this mechanism are kept in constant environment, any change to the left or right being detrimental to the life of the cell. To give a particular example, if a man is transported within a few hours from the Equatorial to the Polar Zones, the external temperature almost sinks from 100 to 0° Degree Centigrade and yet the temperature of the human body is kept at 98.4 degrees, whether the man is at the Equator or at the Pole. This constancy as we have said before, is achieved by the Hypothalamus acting through the Vegetative and endocrine systems.

One other aspect of the influence of Nervous System may be mentioned here, viz., the influence of the Nervous system on Psycho-Neurosis. It is usually thought that the Psyche, though it has a name, has no habitation. But recent advances on the Diencephalon shows that the Psyche too has an anatomical and Physiological basis. The Diencephalon in which are included the Hypothalamus, the Thalamus and the sub-Thalamic body have got extensive connections with Frontal Lobe on the one hand and the vegetative nervous system on the other. The fact that the higher sympathetic and para-sympathetic are situated in the Hypothalamus is proof that the frontal lobe is intimately brought into contact with the autonomic system through the hypothalamus. This association makes it intelligible that most of the mental reactions which are originated in the frontal lobes reflect themselves in visceral systems. Thus the palpitation of the Heart or dyspnea, the distension of the stomach or the hysterical globus can be easily explained. Unfortunately, we have no drugs which have a marked and definite action on the autonomic system and this is the reason why the Psycho-Neurosis are so difficult to treat and we have to depend upon the control of the frontal lobe by Psycho-therapy. It may not be very long before such drugs are discovered and in that event the treatment of Psycho-Neurosis will not be entirely in the hands of quacks, sadhus and Hypnotists, but will come under the purview of the Practitioner of Modern Medicine.

I hope these random thoughts may stimulate many younger and more scientific minds to further research on the Psyche and its treatment.

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"The Lord may forgive us for our sins but the nervous system never does".

—William James—

Congenital Heart Disease

Dr. K. RAMACHANDRA, M.D.

CONGENITAL Heart Disease has by itself become a speciality and a subject fascinating the Physician, the Surgeon, the Obstetrician and the modern student of Medicine, who derives his knowledge about Congenital cardiovascular anomalies from his teachers. In the past this was a subject little known to the Scientist. It has been unravelled and brought to light only in the recent days as a result of necropsy reports and advances in diagnostic procedures in the field of Clinical Cardiology. To exaggerate, it may be said that the young student to-day thinks more in terms of congenital defects than of acquired anomalies. (No doubt this state of consciousness should exist but should never go beyond a certain limit). Diagnosing an acquired defect of the heart as a congenital defect alters the prognosis and sometimes the line of treatment and serious errors may result. Before a congenital anomaly is thought of, it is wise to rule out an acquired defect and not *vice versa*. It should be borne in mind that the incidence of congenital defects of the heart is low. Due to the interest now taken in detecting these defects, the percentage of cases is increasing and ere long it may be statistically significant, revealing thereby that it is not an uncommon condition. As the knowledge about these heart conditions increases, the varieties of Congenital Heart Diseases can be easily separated out by their presenting clinical signs and diagnosed with as much certainty as Mitral Stenosis or Aortic Regurgitation. Congenital defects will not be beyond the scope of recognition by the ordinary methods of examination at our disposal. The eye and the stethoscope alone can be useful and the elaborate laboratory techniques which may be of help in doubtful cases should not be the sole diagnostic agents.

As knowledge is increasing, it has become quite apparent that cyanosis and clubbing are of negligible help as findings in a congenital heart affection as the majority of cases present no such feature. Only

a minority of individuals with congenital cardiac abnormalities are cyanotic. So these defects have to be viewed from a different angle as new orientation and new light has been thrown on this subject. To say that cyanosis is pathognomonic of congenital heart disease is an anachronism. No doubt cyanosis does occur in several cases but its incidence is not so great and is not helpful in the diagnosis of the case.

So from the preceding lines it is quite apparent that the outlook has completely altered and that the student has to look at it from quite a different angle. Operative procedures are now possible in the treatment of selected cardio-vascular anomalies. The pediatric physician by experience has to acquaint himself with the gradation in physical signs and clinical features between various congenital defects to avoid the oft-committed error of subjecting to surgery a cardio-vascular anomaly surgically not amenable to treatment. Thoracic Surgery even at present is not without danger and such a gross mistake should at all costs be avoided. It is here that the Radiologist plays an important part. Angiocardiography and Cardiac Catheterisation can be of use and the diagnosis should be fool-proof before thoracic surgery is attempted. In the days to come when the techniques in anaesthesia and cardiac surgery are perfect, diagnosis may perhaps be made on the operating table just as in Laparotomies done for the diagnosis of pathological processes in the abdominal viscera.

Congenital Heart defects are usually discovered in routine examination of a patient who visits the clinic for some other condition. These defects sometimes are so small and benign that the myocardium is able to stand the strain of these various shunts adapting itself to the new circulatory dynamics from birth so well that only a few develop congestive heart failure. The danger of myocardial damage arises when such hearts are involved in Rheumatic Infection or Bacterial Endocarditis. When these two common complications are superimposed, a congenitally defective heart gives way and myocardial failure occurs. Otherwise the majority of these patients live their full span of life and the lesion is usually discovered in routine necropsies. It would therefore be wiser to consider these defects not as pathological with a grave prognosis but merely as physiological and anatomical peculiarities. Several of these individuals have multiple defects in the heart as the evolution of one part often depends to a great extent upon the proper unfolding of another. In a small percentage of individuals Rheumatic Valvular lesions are combined with Congenital Heart defects making the subject even more interesting and intricate. Very often it is impossible by clinical methods alone to diagnose these multiple defects. Such defects are only noted in the Post-mortem room rather than in the wards. It is simpler to think about

the future developments which will be of help in the diagnosis of these defects accurately, e.g. the direct visualisation of the heart chambers using radioactive substances. At present motion pictures are taken after injection of the radio-opaque dyes which often are of little help but the discovery and use of a radioactive substance which will maintain its radiations for a longer period of time will be of great value.

Why do congenital defects occur? It is not definitely known. Malformation of the heart due to mechanical impediments or lie of the foetus may be responsible. Various foetal infections, syphilitic or viral, may be responsible. German measles or Rotheln occurring in mothers at the eighth week of pregnancy may be the cause as children born to such mothers showed congenital defects and it has been recommended that therapeutic abortion should be induced in such people to avoid the birth of defective children. So virus infections may be the cause of foetal endocarditis. Other factors such as consanguinity in marriage, alcoholism in parents, birth of children to old parents, repeated pregnancies have been, in part, held responsible for these abnormalities. Sometimes a developmental arrest of the heart has been noted in the foetus, its heart resembling the heart of fish, amphibian, bird or other lower animals. One chambered heart, two chambered or three chambered. Of course it is quite impossible to imagine that life is possible. These foetuses are either born-dead or die immediately after birth. As the heart gradually passes through different stages during its development, (Phylogenesis is repeated in ontogenesis), it is not difficult to imagine from embryological experiments that developmental arrests can produce various types of hearts:

Cor biloculare
Cor Triloculare bi-ventriculare
Cor Triloculare bi-auriculare
Cor outside the chest, in the neck & Abdomen.
Ectopia cordis cervicalis etc.

Unimaginable entities can be discovered in a routine post-mortem carried out on dead foetuses or in developmental freaks and may be explained by embryology. These cardio-vascular anomalies are of interest only to the student of comparative anatomy. For the clinician such entities almost do not exist because no such cardio-vascular freak can survive long enough to seek the physician's aid.

Apart from these gross defects where life is not possible—many types of anomalies are constantly seen in practice which are easily detectable by experience and careful clinical examination of the cardio-vascular system. As mentioned before, the majority of them are not

associated with any symptoms, the oxygen saturation of the blood is normal and no evidence of any anoxaemic symptoms or signs is detectable. These fall into the acyanotic group of congenital heart diseases where cyanosis is never seen unless congestive heart failure supervenes. Usually such individuals live their full span of life if death does not occur in a few years after birth

Co-arctation of Aorta
Aortic Stenosis—Subaortic Stenosis
Double Aortic Arch—Dysphagia Lusoria
Defects of Orifices.

—are some examples of such anomalies and each has its own peculiar features.

In the next group of congenital defects, cyanosis is a marked feature occurring from birth and persisting till death. The degree of cyanosis may vary with the type of defect and also from time to time. The cyanosis is intense with exertion and during the period of a febrile episode complicating the condition. Cases have been seen with a deep purple coloration of the tongue but still living till adulthood and sometimes till old age, demonstrating thereby the tissue-adaptability to a diminished oxygen supply. It is only when acute oxygen insufficiency to tissues occurs that death is instantaneous but when the oxygen content of blood is low from the start, the tissues are able to function though not on a par with tissues having the normal oxygen supply. The growth of the tissues and the metabolic needs are lessened *pari-passu* with lowered oxygen supply. It is this which is responsible for the stunted growth and poor muscular and mental development of such individuals.

Cyanosis is most marked in the periphery of the body and in intense cases the whole body may be cyanotic. Clubbing is due to the cyanosis.

Cyanosis in such congenital defects is a result of admixture of arterial and venous blood through the defects in the septa or direct entrance of venous blood into the aorta in cases of dextro-position or transposition of Aorta. A minimum degree of cyanosis is apparent when one-third of venous blood enters the arterial system and the degree of cyanosis increases with the increased admixture of venous blood.

Other factors in the pathogenesis may be the result of defective oxygenation in the lungs due to defects in the Pulmonary artery—pulmonary stenosis or atresia of pulmonary artery carrying less blood to the lungs, with the existing, pathological changes in the alveoli preventing

the oxygen diffusing through the capillary wall. Associated with defective oxygenation there is always increased de-oxygenation at the periphery adding to the cyanosis.

An abnormally high percentage of haemoglobin seen in such heart diseases adds to the degree of cyanosis.

In some congenital defects all the four factors operate to produce cyanosis but in the few one of them may be responsible.

1. Transposition of vessels with or without I. V. septal defect.
2. Persistent Truncus Arteriosus.
3. Dextro-position of Aorta with I. V. septal defect.
 - (a) With Pulmonary Stenosis—Fallot's Tetralogy.
 - (b) Without Pulmonary Stenosis—Essenmenger's Triology.
4. Pulmonary stenosis with or without I. V. Septal defects.

Death in this group of heart defects is usually early within the first two years of life as a result of respiratory infections—pneumonia etc., recurrent attacks of respiratory catarrh, susceptibility to pulmonary tuberculosis, the strain on the circulation. Course is progressively downwards. Where cyanosis is moderate, many of them have lived to old age. Women have given birth to children indicating the extent of myocardial reserve and adaptability of the heart in spite of the mechanical defects.

Other symptoms such as epileptiform fits, convulsions, syncopal attacks and praecordial pain may occur due to diminished oxygenation of tissues. Cerebral thrombosis has been noted due to the polycythemia which is present in the cyanotic group. In the III group, cyanosis may not be present at birth but occurs now and then or later in life due to the presence of some factors interfering with the normal pressure relations within the heart. Here communication exists between the systemic and pulmonary circulations through defect in the Septa such as,

- I. A. Septal defect.
- I. V. Septal Defect.
- Patent ductus arteriosus.

The blood flow in health is from areas of high pressure to those of low pressure i.e. arterial to venous thus explaining the absence of cyanosis. When decompensation takes place during an acute illness like pneumonia or during heavy physical exertion, this normal relationship is upset and blood flows from the venous to arterial side. Veno-arterial shunt is responsible for the cyanosis which is transient and hence referred to as the cyanosis tardiva group. Such children always live a healthy existence unless some complication such as bacterial endo-carditis carries them off without themselves being aware that they are subjects of heart defects.

It would be inappropriate in this paper to discuss the various features of congenital heart disease as it is a vast subject, but to omit mentioning the various clinical procedure adopted in clinical cardiology will not make the subject complete. Along with the physical findings detected on examination of the heart, a routine fluoroscopic examination often is necessary to study the size of various heart chambers and the pulmonary vessels.

Shunt of arterial blood, through an intra-cardiac septal defect to the right side increases the volume of circulating blood in lungs. This is revealed on fluoroscopy by enlarged sharply delineated hilar shadows due to pulmonary hypertension and active pulsations are noted—hilar dance. The pulmonary artery is also widened and the conus is seen as a bulge occupying the waist line of the heart. On the other hand in pulmonary atresia the volume of blood entering the lungs is much diminished. The hilar shadows are decreased in size and a concavity or sharp angulation is noted in the upper left margin of the cardiac shadow in the region of the pulmonary artery—i.e. there is a well marked waist line and the heart has an aortic configuration.

Radiographic visualisation of the heart chambers by means of the administration for radio-opaque dye in conjunction with the use of multiple exposures or the taking of motion pictures of the fluoroscope screen has made possible the visualisation of the course of blood through the living heart and the demonstration of the exact nature of congenital defects. This may be very useful in detecting patent ductus arteriosus, Co-arcuation of aorta and Septal defects. Cardiac catheterisation is done by passing a catheter into one of the arm veins and manouvering the catheter into the superior vena cava and right auricle under a fluoroscopic screen and analysing the blood for (1) O_2 and CO_2 content; (2) estimating the pressure in the chambers. This may be of use in gauging whether septal defects are the present. The same catheter may be manouvered to the ventricle—through the septal defects into left side under a fluoroscope. Such gymnastics may not be useful in all cases as much skill and experience is necessary.

Moreover the size of the defect may prevent the passage of the catheter. So this investigation is useful for blood analysis rather than direct visualisation of Septal defects.

Other methods of approach, quite indirect but useful, will enable the diagnostician to have an idea whether short circuit is taking place in shunts e.g., by doing the circulation time, arm to lung and arm to arm.

In spite of adopting these elaborate techniques, to the sad experience of the physician many of the defects are missed or defects unthought of by the diagnostician are seen by the pathologist on the post-mortem table. The eye and the stethoscope if trained well in the art of cardiology may be more useful and trust-worthy.

I thank M/s. Standard Pharmaceutical Works Ltd., Calcutta for the liberal supply of Cormid (Nikethemide B. P.) given for clinical trial. The drug has proved extremely satisfactory as a respiratory stimulant.



DO IT NOW—

Last summer, hoping to inspire his workers with promptness and energy, a New York executive hung a number of signs reading "DO IT NOW" around his factory and office. When he was asked some weeks later how his staff had reacted, he shook his head sadly. "I don't even like to talk about it" he said. "The cashier skipped with \$ 4,000/- the head book-keeper eloped with the best Secretary I ever had, three typists asked for an increase, the factory workers voted to go out on strike, and the Office boy joined the Navy".

—Sid Ascher in Caravan.

The Fine Art of Diagnosis

Harvey Cushing, the brain surgeon, was once examining a woman patient who complained of severe headaches and vertigo. His office had just been redecorated, and the odour of fresh paint was so strong that Cushing himself had a slight headache from the fumes.

"Does this smell of paint bother you?" he inquired casually, as he proceeded with his examination.

"I don't smell anything", said the woman.

"Anosmia", murmured Cushing to himself. Further investigation satisfied Cushing that his patient was suffering from a brain tumor which was then surgically removed. The woman's headaches and vertigo disappeared.

—By Henry Morton Robinson.

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Sir William Osler had an undoubted genius for spotting obscure maladies at sight. His most tragic diagnosis was on a friend who had just returned from a term of military service in India.

Osler and his friend were smoking and chatting before a pleasant fire in the doctor's home. The doctor, a magnetic raconteur, was unfolding an unusual medical history, when he noticed that the guest's cigarette had burned down to a stub and was searing his fingers. Yet the spell bound man seemed to be feeling no pain. Osler knew that such deadening of the nerve could mean only the most dreaded of diseases—leprosy. It then became Osler's painful duty to announce his heartbreaking fact to his friend, who died a few years later at the leper colony.



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Our new Vice-Principal.

Dr. ADISUBRAMANIAM, M.B.B.S., B.S.Sc.,

Professor of Hygiene



Dr. GOVINDA MENON, B.A., M.B.B.S., M.Sc.,

Professor of Anatomy.

Some facts about Vitamin B₁₂

C. N. JAYARAMAN

THE days of vitamins are not yet over. A sober evaluation of their limited possibilities in therapeutics was just dawning on the medical men. At a time when much of the glamour of vitamins was being shed vitamin B₁₂ came into the field and has come to stay. It has revolutionised the old concepts of haemopoiesis, provided a potent therapeutic tool against pernicious anaemia with its dreaded nervous complications and stimulated research in many other fields.

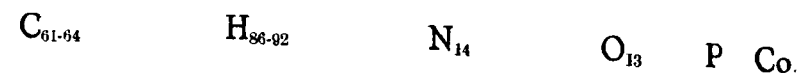
The pernicious Anaemia patient of olden days had to consume 1 lb. of raw liver every day, a veritable ordeal with an atrophic stomach. Liver extracts were then introduced and for humane reasons, the search began for the active principle in the liver which could be isolated and administered in smaller quantities. In this fractionation of the liver extract, E. L. Smith claimed some success. Later Rikes announced the isolation of the A. P. A. factor in the pure state, which he christened "Vitamin B₁₂". From pounds to microgrammes it is a big step indeed. Moreover, the Herculean task of fractionating enormous quantities of liver for a little of B₁₂ is no longer needed, the Vitamin being obtained from the culture fluid of the mould streptomyces griesus.

Preparation and Properties: Vitamin B₁₂ was prepared from either liver extract or culture of streptomyces griesus by chromatographic absorption on activated charcoal. This is diluted with methanol and the latter with aqueous solution of acetone, Butanol or Benzyl alcohol. The elute is evaporated and residue is left in the alcohol. The precipitate is dissolved in Methanol and several volumes of acetone added to precipitate the vitamin which is dissolved in water and on further addition of acetone a turbidity is formed. This solution, on standing, precipitates red crystals of Vitamin B₁₂.

Physical Properties: It is obtained as red needle-like crystals with no definite melting point, but it darkens at about 210-220°C soluble in water, Methanol, ethanol and phenol. Insoluble in acetone, ether and Chloroform.

Molecular weight 1490.

Does not liberate amino acid on hydrolysis. It is laevorotatory. Its formula approximates to



Chemical Constitution: This is not known, but it is believed that the molecule of Riboflavine and Vitamin B₁₂ contain the same nucleus. An interesting feature is that a molecule of vitamin B₁₂ contains an atom of cobalt, which is a factor in haemoglobin synthesis. This offers great scope for research.

Occurrence: Dried streptomycis griesus slopes are found to be the richest source of vitamin B₁₂. They contain 35 to 40 microgrammes per 100 grammes. Vitamin B₁₂ is therefore now obtained in large quantities as a by-product in streptomycin manufacture. Vitamin B₁₂ is also synthesised in the gut by the bacterial flora in normal individuals and even in pernicious anaemia patients to some extent. This synthesis is promoted by cobalt. The relative Vitamin B₁₂ values of some food stuffs are given below:—

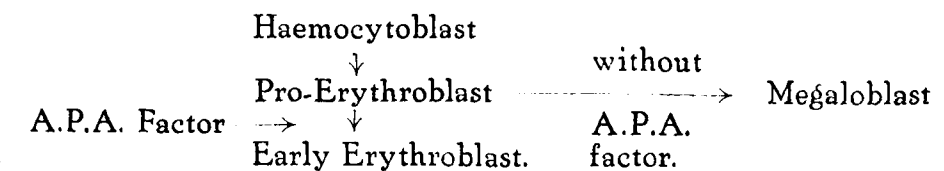
		Microgrammes	per 100 grams.
Beef & Mutton	 5		
Veal	 4	"	"
Horse meat	 7.5	"	"
Port	 1 to 3	"	"
Milk powder, cheese, caisen.	2 to 3	"	"
Egg yolk	 2.8	"	"
Soya bean	 8	"	"
Wheat	 7	"	"

Plant materials contain practically negligible amounts.

Role of Vit. B₁₂ in Haemopoiesis: The old Castle's theory of the A. P. A. factor can be stated as follows:

Extrinsic factor + Intrinsic factor = A. P. A. Factor or	
Haemopoietic Principle	
Present in	Secreted by the
protein food.	stomach
	or
	Erythrocyte maturation
	factor

The haemopoietic principle is absorbed, stored mainly in the liver and utilised by the erythropoietic tissues, chiefly the bone marrow. It is necessary for the conversion of the pro-Erythroblast into the Erythroblast and in its absence a megaloblastic reaction occurs.



In pernicious anaemia, it was held, the intrinsic factor was defective and so A.P.A. factor could not be synthesised. The rationale of liver therapy was that it supplied its store of the synthesised haemopoietic factor.

The entry of Vitamin B₁₂ into this picture created more problems than it solved. For vitamin B₁₂ to be orally active, normal gastric juice was found to be a helpful adjuvant. Moreover, large quantities of vitamin B₁₂ were found to be excreted in the faeces in some of the Megalocytic anaemia patients, perhaps explained as non-utilisation due to absence of intrinsic factor. These led to the identification of B₁₂ as the extrinsic factor.

But the effectiveness of vitamin B₁₂ parenterally, more than anything else, leads to the identification of it as the haemopoietic factor itself. If thus the extrinsic factor and A.P.A. factor were to be identical, what is the role of the intrinsic factor? It has now been relegated to the status of an enzyme like substance which facilitates absorption of the extrinsic factor but does not contribute to the formation of the A.P.A. factor.

The other interesting and valuable aspect of this vitamin B₁₂ is that it includes the "neuropoietic principle" also (in contrast to Folic acid). The terror of subacute combined degeneration of the cord has certainly been lessened.

But there are at least two macrocytic anaemias—*spue* and pernicious anaemia of pregnancy that respond to folic acid and not vitamin B₁₂. What is the relation between the two?

The relationship of Vitamin B₁₂ to Folic Acid: When aminopterin is given during the injection, or prior to the injection of B₁₂, the response to vitamin B₁₂ is delayed. This suggests that Vitamin B₁₂ and folic acid interact in some way in the body. Heinle, Welch and Shorr produced experimental anaemia in swine which represented a dual deficiency of Vitamin B₁₂ and folic acid. When such double deficiency existed, with either folic acid or liver extract, a slight haemopoietic response was induced. But eventually, each was unable to induce a satisfactory response unless the other was also present. These investigators suggest that in human pernicious anaemia, "a double deficiency also exists".

In the Health Centre Journal, Luhby and Wheeler, after studying the effects of Vitamin B₁₂ and folic acid therapy in special cases of megaloblastic anaemia of infancy, advance the following hypotheses:

- (i) If the folic acid deficiency is sufficiently pronounced, even large doses of Vitamin B₁₂ are haematologically inert.
- (ii) If enough Vitamin B₁₂ is not available large doses of folic acid should be haematologically inactive.
- (iii) The relationship between folic acid and vitamin B₁₂ can be expressed as

$$(\text{Folic acid}) \times (\text{Vit. B}_{12}) = (\text{Erythrocyte maturation factor.})$$

Thus, by the law of mass action, Luhby and Wheeler suggest large doses of folic acid may force small but sufficient amount of B₁₂ into a reaction. Conversely the effectiveness of small amounts of folic acid may be apparently enhanced in the presence of large amounts of Vitamin B₁₂. The implication of these is obvious. Castle's erythrocyte maturation factor is not a single entity but it is "dependant upon if not identical with at least the factors Vit. B₁₂ and folic acid". They state that Castle in his original description of erythrocyte maturation factor "probably was referring to the substance now recognised as Vitamin B₁₂".

Other functions of Vit. B₁₂: Vitamin B₁₂ has also been identified as one of the growth factors. According to Dameshek, Vitamin B₁₂ plays an important role in animal nutrition because of its apparent relationship "with the animal protein factor" which is necessary for the optimum growth in chicks and the adequate hatchability of hen's eggs. In the

Journal of Biological Chemistry, Ott & collaborators say that Crystalline Vit. B₁₂ can replace crude sources of 'animal protein factor' in promoting chick growth. Thus Vit. B₁₂ may perhaps be responsible either wholly or in part for the growth-promoting activity of such feed supplements in human infants too.

Further it is said Vit. B₁₂ has a curative effect in Allergic Bronchitis. This is probably due to the effect of Vit. B₁₂ on the utilisation of proteins. It is also known that Vit. B₁₂ has got a lipotropic effect when injected in rats fed on high fat diet. If acute carbon tetrachloride intoxication is preceded by administration of Vit. B₁₂, liver damage is prevented. Vit. B₁₂ may therefore progress to be one of the guardians of the liver.

Recently, with the advent of radio-active isotopes, attempts are being made to "trace" the metabolism of vitamin B₁₂ using "labelled" Cobalt, carbon and phosphorus. The results may throw light on the intricate problems yet unsolved.

My thanks are due to Sarabhai Chemicals, distributors of Squibb Products, for furnishing the necessary literature Vitamin B₁₂.

—★—

FORMULA FOR SUCCESS—

Stand up to be seen—speak up to be heard; shut up to be appreciated.

—Toast master's Manual.

* * *

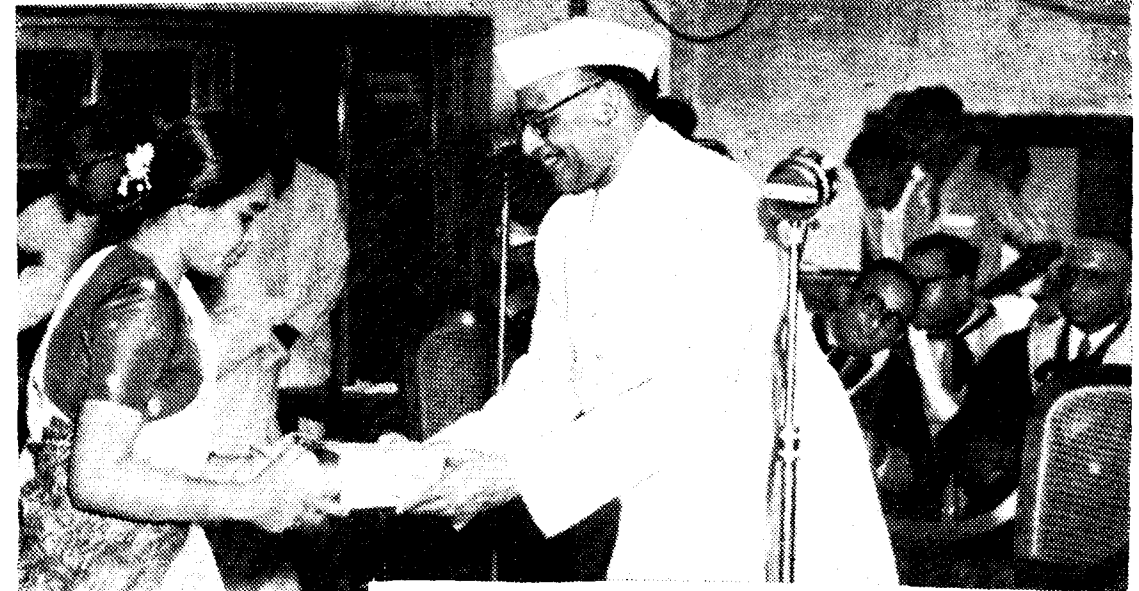
Britain's Lord Halifax attributes his success in speaking to a bit of advice given him by Winston Churchill. "It's quite simple," Churchill said. A friend of my father's once told me: "Say what you have to say and when you come to a sentence with a grammatical ending, sit down".

(U.P.)

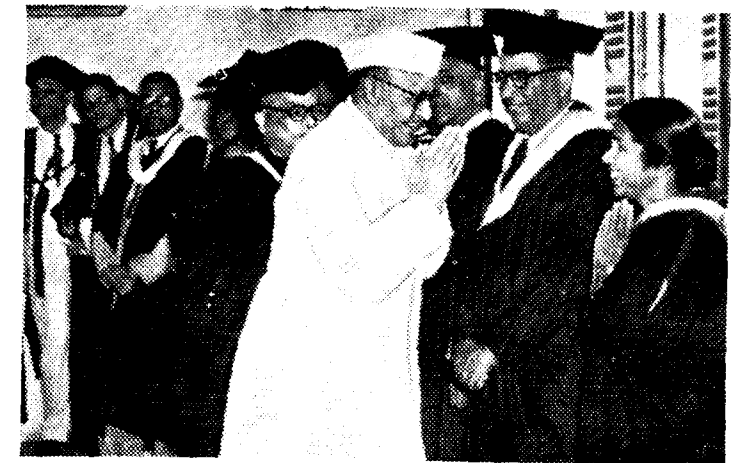
The Wings of Time

Ah! that I would hold time in his flight,
 Sweet hours bless'd with rapture and delight,
 But O, he marches on so quick, so fast
 Never to return from the realms of Past!
 And, Time in his march, does what role play,
 A sad one now, and now one happy and gay.
 He robs of some, "a dear ones" few,
 And yet blesses some with some blessings new!
 We smile awhile, ere we shed a tear,
 And so the tale is repeated from year to year.
 But Time shall march on and pass away,
 For he bears the griefs of yesterday;
 In tomorrow, he brings a vision of Hope,
 When once again our desires with the day elope!
 He comforts us and heals the wounded mind;
 And we without care, leave behind,
 The dust of past, the anguish, the pain,
 Pressing on to other things and so to start again!

—ASGHAR ALI.



Dr. A. Malathi, the Johnstone
Gold Medalist of the year.



H. E. Sri Prakasa, Governor of Madras, introduced
to the members of the staff.



GRADUATES' RECEPTION

C. R. addressed them.

"...Shorter course and rural relief".

RURAL MEDICAL RELIEF WING.



The village awaits...



...healing hands.



and words of comfort.

"Go there in the spirit of learning something in the process of helping others"

NEHRU

Quotable Quotes

It is wise to apologise to a man if you are wrong—and to a woman if you are right.

—Salisbury (N. C.)

* * *

The trouble with the world is that the stupid are cocksure and the intelligent full of doubt.

—Bertrand Russell

* * *

Besides the noble art of getting things done, there is the noble art of leaving things undone. The wisdom of life consists in the elimination of non essentials.

—Lin Yutang.

* * *

Men are wise in proportion not to their experience but to their capacity for experience.

—George Bernard Shaw.

* * *

The highest reward for man's toil is not what he gets for it but what he becomes by it.

—John Ruskin.

* * *

Respectability is the cloak under which fools cover their stupidity.

—Somerset Maugham.

* * *

Ambition is the last refuge of the failure.

—Oscar Wilde.

* * *

Tolerance is only another name for indifference.

A case of Co-arctation of the Aorta

K. S. MANI, *Final Year.*

At the very outset I must offer my gratitude and most sincere thanks to Lt. Col. K. P. G. Menon for having given me permission to present this case in our magazine, Dr. K. Ramachandra for having helped me in writing this article and the authorities of the Bernard Institute of Radiology for having furnished me with the necessary clinical photographs.

WARD: Havelock. Medical officer: Lt. Col. K. P. G. Menon. Name: Chengalrayudu. Age: 30. Sex: Male. Occupation: Weaver. Address: c/o Sri Ramdas Narasimhulu, Pullampet P.O., Cuddappah District. Admitted on: 12th August, 1952.

Complaint: (1) Lump in abdomen. (2) Breathlessness on exertion and distension of abdomen. (3) Feeling of generalised weakness.

Duration: (1) Seven years. (2) & (3) Six years.

History of Present illness: About seven and a half years ago patient had fever with rigor every alternate day for a month and a half for which he sought native treatment. Six months later he noticed a small lump in the left hypochondriac region. An year later he developed breathlessness on exertion, fluid in the abdomen, edema of legs and puffiness of face. This lasted for a month and a half, when he sought admission under Dr. K. Narayanamurthy in our hospital. After tapping the fluid in the abdomen he noticed a big lump in the abdomen. He was sent home after a month and a half relieved of his symptoms. Since then he has been to this hospital twice, once in 1950 and next in the early part of this year for his old trouble. Now back he is under Lt. Col. K. P. G. Menon for the same old complaint.

History of Previous illness: Gives a history of fever with rigor every alternate day for a month and a half, seven and a half years ago. No cough or hemoptysis or fever with joint pains. Gives a history of hematemesis during his stay in the hospital under Dr. Narayanamurthy. No history of exposure.

Habits: Non-vegetarian; smokes cheroots; not addicted to alcohol.

Family history: Nil relevant.

CONDITION ON ADMISSION

General Examination: Patient looks an apparently ill-nourished individual with sunken eyes, prominent malar bones, sunken cheeks and protuberant abdomen. Apparently anemic. Not jaundiced or cyanosed. No clubbing of the fingers. Decubitus—normal in the supine posture. Lymph nodes not enlarged. Superficial veins of thorax and abdomen prominent. Prominent pulsations seen in the supra-sternal notch. Tortuous, pulsatile vessels seen over back of thorax. Tonsils and Tongue—normal. Teeth—dirty. Appetite—good. Bowels and micturition—normal. Sleep—not disturbed.

CARDIO-VASCULAR SYSTEM

Pulse: 78/min. Regular. Volume and tension—fair. Condition of vessel wall—normal. Femoral pulse not palpable on both sides.

Blood Pressure: Upper limb { Right — 158/78.
Left — 154/84.

Lower limb—No sounds heard; too low to be recorded.

Inspection: Apex beat visible in fifth left inter-costal space just outside the mid-clavicular line. Pulsations seen over the entire precordium, especially near the base of the heart. Ribs and inter-costal spaces—normal. Superficial veins prominent over front of chest. Tortuous pulsatile vessels seen posteriorly in the interscapular area. Pulsations seen also in the root of the neck.

Palpation: Confirms inspection. Apex beat is heaving in character. Pulsations are felt over the tortuous vessels. No thrill felt over the area of maximum cardiac impulse or base of the heart or neck or the dilated vessels. Trachea not deviated.

Percussion:

	II rib.
I" lateral to mid-sternal line.	II space, 3½" lateral to mid-sternal line.
	4".....X
	fifth left inter-costal space

Auscultation: (1) sound completely replaced in all the areas. (2) sound normal throughout. Systolic murmur heard throughout the precordium, soft in the mitral area, but of greater intensity in the other areas. No definite line of propagation. Point of maximum intensity not clearly defined. No "humming top" murmur heard in II left space away from the sternum.

Systolic bruit heard also over the tortuous vessels on the anterior and posterior aspects of the thorax—viz. Over the mid-third of the right clavicle, root of the neck, both supra-clavicular fossae and supra-scapular areas, inter-scapular zone and along the anterior abdominal wall one inch to the left of the mid line and parallel to it extending downwards to the umbilicus.

Respiratory System: Respiratory rate-22/min. Rhythm-Regular. Nil abnormal detected.

ABDOMEN.

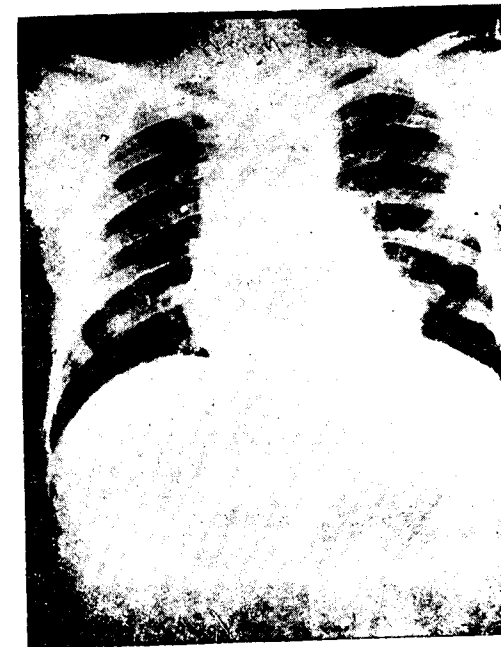
Inspection: Abdomen distended. Skin over it is stretched and shiny. Abdomen moves freely with respiration. Umbilicus flush with surface. Prominent superficial veins seen. Longitudinal, tortuous, pulsatile vessels seen on the left side of the anterior abdominal wall one inch lateral to the mid-line and parallel to it. A visible projecting mass is present in the left hypochondrium and left lumbar region. No other lump visible on the abdomen. No hemorrhoids visible in the anal region.

Palpation: Spleen enlarged seven fingers-breadth below the left costal margin in the mid-clavicular line. Tip of spleen felt about an inch above the umbilicus. Firm in consistency. Margin rounded. Splenic notch prominent. Not tender. No other palpable mass present. Prominent superficial veins above the umbilicus fill in from below upwards and those below from above downwards. Fluid thrill not elicited. Pulsation and thrill felt over the dilated vessels (superior epigastric)

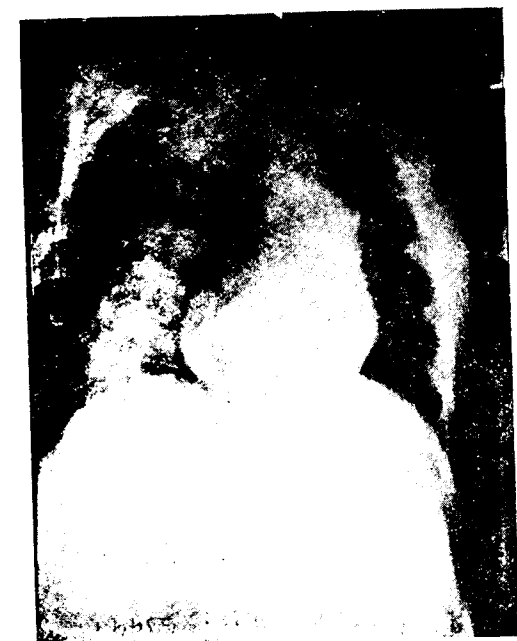
Percussion: Confirms palpation. Shifting dulness elicited.

Auscultation: Borborygmi heard. Systolic bruit heard over the tortuous vessels.

Nervous System: Nil abnormal detected



A. P. VIEW.



L. A. O. VIEW.

Laboratory Investigations :

1. Blood: R.B.C. Count 2.23 Millions per cubic mm.
Hemoglobin 30%
W. B. C. Count. { Total 2400
 Differential. P₇₂ L₂₄ E₂ M₂
2. Urine: Acid; no albumin; no sugar; no deposits.
3. Skiagram Chest :
 - (a) Postero-anterior view....
 - (i) Boot shaped heart.
 - (ii) Very wide aorta;
 - (ii) Straight left margin of the aorta;
 - and (iv) Scalloping of the inferior margins of most of the ribs.
 - (b) Left anterior oblique view....
 - (i) Left ventricular enlargement;
 - (ii) Marked widening of the ascending aorta;
 - (iii) Arch of the aorta and descending aorta not visible.
4. Flouroscopy: Prominent and pulsatile hilar vessels.

Progress and treatment: Little can be done in this case. He had a second bout of hematemesis about a fortnight ago. He has had two blood transfusions so far. He is on Mist. Ferri Sulf.

Discussion: The diagnosis of coarctation of the aorta has been made from the following points:

- (1) Systolic murmur heard throughout the precordium, suggestive of a congenital heart disease.
- (2) Prominent dilated collateral channels in the inter-scapular area and over the anterior abdominal wall. (Superior epigastric branch of internal mammary artery, supra-scapular and superior inter-costal vessels).

- (3) Raised blood pressure in the upper limbs; absence of pulsations in the femoral arteries.
- (4) Skiagram findings—Boot shaped heart; wide ascending aorta and scalloping of the ribs.

Co-actation of the aorta is a congenital heart lesion in which there is a narrowing of the aorta (coarctare, to press together) in the region where it is joined by the ductus arteriosus. Two forms have been recognised, the infantile and adult. In the former the constriction is proximal to the ductus, between it and the subclavian artery, and the ductus most often remains widely patent. Other cardiac anomalies are common in this form. In the adult type, the constriction is just distal to or at the junction between the ductus and the aorta. Rarely it may occur proximal to the ductus. Other cardiac anomalies are rare in this type.

The exact causation of this condition is not known. It has been said that in these cases there may be an extension into the aorta of the obliterative process set up in the ductus after birth.

Clinically there may be no symptoms at all, the lesion being found accidentally during a routine examination. Or they may be referable to the brain, heart or limbs. Thus the patient may complain of headache, faintness and giddiness; breathlessness on exertion, palpitation, cough etc., feeling of generalised weakness; well formed upper limbs, but poorly developed lower limbs and attacks of cramp like pains in the lower limbs during walking (intermittent claudication). Whatever the sign, cyanosis is never present unless the left ventricle starts failing. On examination murmurs may or may not be detected over the precordium. There may be elevated blood pressure—systolic as well as diastolic, in the upper limbs. The femoral pulse in the lower limb may be weak and the blood pressure low. This discrepancy between the blood pressure readings in the upper and lower limbs is characteristic. Where the constriction is provisional to the origin of the left subclavian artery, the blood pressure readings vary between the two upper limbs. The pulse is also weak in the left upper limb. Depending upon the degree of the constriction, the collateral channels usually open up to supply some blood at least to the deprived tissues. Thus the superior epigastric establishes a free anastomosis with the inferior epigastric and the supra scapular with the inter-costals. It is this which gives the systolic bruit over these dilated tortuous vessels, and also causes an erosion of the inferior surface of the ribs.

The prognosis in these cases is variable, depending on the presence of complications. Of these by far the commonest is bacterial endocarditis. Others are congestive cardiac failure, hypertension, cerebral vascular accidents, and upper respiratory infections. Many of these patients especially of the adult type are able to lead a full span of life, while others may succumb in their twenties and thirties, or even earlier.

The other physical findings in this case like enlarged veins on the anterior abdominal wall, splenomegaly and ascites are suggestive of hepatic cirrhosis. The recurrent attacks of hematemesis are probably due to rupture of the esophageal varices. Whether the hepatic cirrhosis is of the Laennec's type or forms part of splenic anemia, is a moot point at this stage. Opinion seems to be divided in our hospital over this. And it would indeed be rash for a mere undergraduate to discuss this purely academical point, since at this stage, the treatment is the same for both—viz. next to nothing! On the other hand whether a relationship exists between coarctation of the aorta and hepatic cirrhosis may be proved if angiography is done. One cannot but toy, at this stage, with the perhaps fanciful idea of an abnormal communication existing between the arteries of the anterior abdominal wall and the splenic vessels.

Certain physical findings in this case need explanation as they do not fit in with the text-book description of coarctation of the aorta. Thus the blood pressure in the upper limbs—both systolic and diastolic—is not very high, as has been described. This hypertension in the cases, has been attributed not only to the mechanical factor of obstruction to the onward flow of blood but also to a diminished renal circulation resulting in renal ischemia with consequent hypertension. But in this case the systolic pressure is 158 m.m. of Hg. and the diastolic 78 m.m. of Hg.—truly not high enough to be classed as hypertensive. This anomaly may be due to the co-existence of a patent ductus arteriosus, which is indeed a common abnormality seen along with coarctation of the aorta. The high pulse pressure of 80, the straightened left border of the ascending aorta and the hilar congestion seen on fluoroscopy are all in favour of such a diagnosis. No doubt the characteristic "humming-top" or Gibson murmur is absent, a physical finding not elicited in a small percentage of cases. Various text-books and the experience of some of our physicians in this hospital testify to such a statement. Many cases which were diagnosed as pure coarctation of the aorta have been found to have a patent ductus on autopsy. Hence the absence of this Gibson murmur, the existence of which depends upon the length and width of the patent ductus, need not go against a diagnosis of a probable co-existent patent ductus arteriosus.

Gone are the days when congenital morbus cordis used to be considered incurable. Thanks to the great advance of modern thoracic surgery in the last decade or so, some of the congenital heart lesions are amenable to surgical cure. One such is coarctation of the aorta. It was in October 1944 that Crafoord successfully resected a case of coarctation with an end-to-end suture of the aorta. Since then quite a number of cases have been successfully operated upon. After opening the thoracic cavity, the surgeon clamps the aorta well above and below the coarcted segment, excises it and then performs an end-to-end anastomosis of the cut edges. The cut ends of the intima should be brought into neat opposition with one another and the vessel reconstructed with a continuous overting suture. It has been said that at the end of the operation, the clamps on the aorta should be removed slowly. Otherwise a sudden drop in the pressure may bring on a fatal attack of ventricular fibrillation.

All cases of coarctation of the aorta are not fit for surgery. Children seem to withstand thoracotomy better than adults. Also these patients are liable to develop atheroma of the aorta as early as even 25. Therefore it seems reasonable to advise surgical treatment in any patient below 20. Over 20 or perhaps 25, it may not be so wise as before to advise surgery if the patient is free from symptoms. If, on the other hand, a patient past 25, has progressive symptoms as in this case, here comes the rub. Greater experience is needed before one can be dogmatic about these points. But in the hands of skilled thoracic surgeons, the results are excellent and the patient saved from the traps ready to ensnare him—viz. bacterial endocarditis and congestive cardiac failure.

One cannot but recall before closing this article Dr. Lipscombe's paper during the last Pediatricians' conference. Elaborate procedures like cardiac catheterisation and angiocardiology are not essential in the diagnosis of the nature of congenital morbus cordis. Careful eliciting of history; a careful and thorough physical examination of the patient; accurate blood pressure recordings of all the four limbs; a skiagram of the chest—both antero-posterior and oblique views, the latter before and after Barium swallow; fluoroscopy and if necessary Electrocardiographic recordings—these would do in a vast majority of cases for an accurate diagnosis. This is all the more important since some of these cases are amenable to surgery.

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"Don't let your laboratory examination be an excuse for clinical laziness".

—Hutchison.

Bacteriophage - Therapy

PHAGES—ISOLATION.

Dr. S. GOVINDARAJAN, M.D.

BACTERIOPHAGES known also as *PHAGES* are viruses living on bacteria and capable of lysing them. Phages have been isolated in various infections, but not all of them. They have been found in pyogenic infections, in infective intestinal diseases and in diphtheria.

They have been obtained from cases of dysentery, cholera, typhoid and para-typhoid fevers and food poisoning. Phages active against pyogenic organisms such as *P. Pestis* (plague bacillus), *Staphylococci*, *Streptococci*, *enterococci*, *B. Coli*, *Friedlander's pneumobacillus* and *B. Proteus*, have been isolated. Phages against *C. Diphtheria* have also been noted.

Unauthenticated claims for gonophages have been made and other phage like activities have been attributed to but not shown to be due to phages.

D'Herelle and Phage Therapy: In the early days of phage therapy, D'Herelle and his co-workers claimed great success with phages in their cases and D'Herelle looked forward to a great future for the phages in the therapy of infections. In his anxiety for the phages, he foresaw the possibility of commercial exploitation by firms in those hectic days of phages. I cannot do better than quote his words. Thus he goes "Too often commercial firms mislead both the physicians and the public by clever quotations, clever in the sense that they avoid conflict with the law tending to make it appear that such and such a scientist supervises their products or even controls them". He continues "I now declare that I am and always will remain, a stranger to all commercial enterprises. I may go even further in this direction and state that every time that

I have treated a patient, it has been done solely from a scientific motive". Thus he harboured a fear that phages would get into disfavour unless the treatment was carried out scientifically.

Limitations of Phage Therapy: The phages have not an unlimited application. The limitations of their action are many and varied. It is coming more and more to light that a single phage cannot be used against all infections that even with a single organism, different types of organism exist and each type requires a corresponding phage for its action. Phages vary in their activity. Their virulence for the organisms may change for the better or for the worse by association with the organism and the organism itself may develop resistance against the further action of the same phage. Thus, in the selection of a phage, we must develop a specific strain of phage, active against the organism, and capable of maintaining its virulence in the body.

Environment and the Phages: The action of a phage depends also on the medium in which the phage is suspended. It requires a slightly alkaline medium pH-7. It is destroyed easily by acids and inhibited by mucus, enzymes and bile found in the gastro-intestinal tract. Blood, serum, tissue proteins and cells, all have an inhibitory action on the phages.

Further, bacteria living or dead, their fragments of their products, though they do not destroy the phages, are by themselves capable of fixing the phages, and preventing their action on other sensitive organisms.

If the phages are to be of any use in therapy, they should be administered in sufficient quantity with proper quality. The existing bacterium and gain attachment to it, while it is as yet living and growing; and the phages should proliferate and disseminate to carry over their action further.

Dysentery: In surface and closed infections, favourable conditions exist, in which the phage can produce its maximum effect. *e.g.* in dysentery and cholera, where infection is limited to the surface of the mucous membrane and does not penetrate deep into the tissues, and where the organism is bathed in the lumen of the intestinal tracts in fluids, that are not inimical to the presence or the growth and activity of the phages, D'Herelle and his co-workers claimed greatest success. They have insisted on the correct type of phage being selected and developed and used with all the precautions incidental to any therapy. But subsequent

workers have been not too favourably impressed and the latest group of workers in the Middle East the Second World War Boyd and Portnoy disclaim any use for dysentery phages in the therapy of dysenteries.

Cholera: Controlled experimental investigation of Morison in India has been oft quoted by the workers on cholera to show the effectiveness of usage of cholera phages in preventing epidemics. Morison and his co-workers have conducted careful and extensive field studies in India on the prophylactic and therapeutic value of phage in cholera. They noted Nowgang district to be subjected to regular epidemics of cholera. In 1929, during an out-break, phage was distributed and within 24 hours a decided change for the better in the course of the epidemic was noted. Subsequently, dysentery cholera phages were made available for all cases of diarrhoea with the result that the area was cholera free for 5 years (ten epidemic seasons) although cholera had developed in three adjacent districts. In one of these, the southern control district of Habiganj, phage was dispersed during 1932. Severe cholera flared up in the surrounding districts inspite of the preventive measures but not in Habiganj. At a later date, three small Habiganj villages outbreaks, appeared, all of which lasted only a very short time.

Morison had a mortality rate of 22.6% with the phage treated patients of cholera and 56.6% amongst untreated controls in one series and 21% and 70% in a second series. He further showed that patients receiving phages were less infective. He reduced secondary cases to 1/3 by the administration of phages to the primary cases.

Col. Pasricha did not find in his series the difference to be statistically significant. He found that when agglutinable strains of cholera were isolated from patients, the mortality rate was 8.3% with phage treated, in contrast to 20.6% in cases without phage. With the inagglutinating strains, the mortality was actually treble. But he found less of toxæmia, less of dehydration and less of other complications and the excretion of organisms lasted for a shorter time than what obtains in the natural course.

Pyogenic Infections and Phage Filtrates: Phages have been used therapeutically as local applications on open wounds and deep abscesses or cavities. It is known that the phage filtrates carry, in addition to the phages, (1) the phage lysins, (2) the products of bacterial disintegration and (3) the altered metabolic products of the medium in which the bacterium grows. The phages filtrate can exert its action in several ways:

One of them is by the specific effect of bacteriophagy. It is true that to an area rendered inflammatory, the phages gain easy access. But in a suppurating lesion, there are other inhibitory factors such as pus, tissue debris etc., which prevent the action of phage. Any benefit that the phage filtrate bestows seems to be due to the nonspecific effects.

Non Specific Effect of Phage Filtrates: The phage lysin increases the local leucocytic infiltration and phagocytic activity of the defensive cells. Further, the broken down bacterial products are in such a fine state that they exhibit the antigenic quality earlier and better than the whole intact organism. The good effect of bactericidal and bacteriolytic and other antibodies are felt quicker and better.

Parenteral Phage Therapy: In those diseases, where a bacterium strays away from its local lesion, and disseminates in blood, and is distributed in the tissues, it would be necessary to administer the phages parenterally, by the intravenous route as in Typhoid and related fevers. For, by oral administration, the phages cannot reach the deeper tissues so easily.

In experimental animals, it has been shown that when phages are administered intravenously, they disappear from the circulation and are found only in traces in circulation after 24 hours and the phages are treated by the tissue elements, just as any foreign matter gaining access to the blood. The defensive cells in the body engulf them and they may disappear. The phages when found, are found in the greatest number in the spleen and persist in them for 5 days. When sensitive organisms are present, the phages have been shown to proliferate at their expense.

The phage filtrate contains, in addition to the phage, protein matter. When proteins are injected into animals, they produce protein shock in the form of chills, accompanied by a rise in temperature, that is followed by normal temperature and a nonspecific increase in the immune bodies in blood (natural and specific) and induce certain other changes useful in antagonising infections.

Typhoid Fever: At California ending with 1946, Knouf et al have administered type-specific phages, intravenously in Typhoid fevers, after preliminary transfusions and other precautionary measures, and claim that the administration of 1 cc. of type specific phage suspended in 500 cc. of 3% glucose saline intravenously by drip method taking 4 to 7 hours for its administration, leads to an immediate chill, lasting for one half of an hour, followed in an hour or two, by a rise in temperature to 105° to 107°

lasting for 3 to 6 hours, and coming down to normal in 9 to 24 hours, and remaining normal. Some cases had shown subnormal temperature. The organism disappeared from blood immediately and permanently, and there was a rapid return to normal mental state. This type of treatment demands a close and intimate relationship and fellowship, between the laboratory and the clinician, in carrying out the blood cultures promptly, phage typing of the organisms quickly, and manufacture of a fully virulent phage, adapted to the infecting organism speedily.

Present Status of Phage: In view of the reactions, quoted before, this type of phage therapy has not found favour in general with the clinicians. The last two decades have seen an enormous advance in chemo-therapy of infections, both by synthetic chemicals and antibiotics, and the phages have been relegated to the back ground. The greatest use for phages, of late, has been found in typing out the organisms according to their phage specificity, and tracing the disseminator of infection, the source and route of spread of infection in an outbreak of epidemic, in the hospital wards and other institutions. A careful study of the personal and the social habits of the individual, leads to the correction of those habits, and prevention of further spread of infection, by the institution of safe measures. When phages are to be used in therapy, a properly typed out specific phage with good potency alone should be used to ensure any favourable result.

—★—

Court room Strategy: A. S. Trude, the famed trial lawyer, and the distinguished Dr. Frank Billings lived next door to each other in Chicago. One day Billings testified as a medical expert against Trude. Trude's cross-examination of his eminent neighbour was brief. "Was Marshall Field one of your patients?" he began.

"Yes".

Trude asked, "where is Mr. Field now?" and the doctor said "Dead". Trude named other patients of Billings—Mr. Armour, Mr. Pullman, Mr. Cudahy, all of whom had died natural deaths. Each time Trude asked: "Where is he now?" and each time Dr. Billings had to answer: "Dead".

"That's all, thank you", the lawyer concluded, and won his case.

—Leonard Lyons.

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Bone Tuberculosis in Children

Dr. C. VYAG,

Department of Orthopaedics,
General Hospital.

TUBERCULOSIS in general is now on the increase in India than what it was a few years ago. The apparent reasons for the increase are the existence of famine conditions and overcrowding in the cities and towns. Because of these two reasons children's health is usually neglected and hence the lowered resistance for the benefit of tubercle bacilli.

The commonest tuberculous affection in children is of bone and joints, apart from lymph glands. Even though it is usually secondary infection, it is not always possible to locate the primary lesion. The primary lesion is usually in the lymph glands in most cases rather than in lungs as compared to adults.

It is usually described in text books that the nature of the organism is the bovine type that is commonly affecting the bones and joints. But we are of the opinion that the tuberculous infection in children at least in South India, is almost all direct contact infection from human beings. The universal practice in South India is to boil milk very well before consumption and so it is not possible for tuberculous infection from milk to occur as the bacilli would have died due to boiling. It is therefore presumed that all infection is due to human type of bacillus, though exact research has not been possible to undertake. In view of this, it should be realised, how important it is to segregate pulmonary tuberculosis cases especially the open type. We are of the opinion that practically all bone and joint tuberculosis in children is due to infection by some chronic fibroid pulmonary tuberculosis with open cases in the household who infect the children in fondling and caressing them. The infection of the skeleton occurs through the embolic bacilli with debris, which block the end arteries near the joint and forms a focus of infection. The joints might get infected either through the bone or through the symovial membrane. In the osseous type the prognosis is usually bad as

bone destruction occurs and the joint gets completely disorganised, but in synovial type under active treatment with the modern antibiotics the joint mobility can be maintained.

Going through the records in the orthopaedic department, it was found that out of 844 case of orthopaedic conditions in children, 87 cases belong to bone and joint tuberculosis which works out to be about 10%. This figure as compared to U. S. A. statistics is $1\frac{1}{2}$ times higher which was only 4%. The enclosing charts will show the comparison going into the details of the cases it was found that the maximum number of cases belong to spinal tuberculosis as against the affection of other joints. The chart that is shown here given an idea of the other types of cases. There is no special predilection to sex; either sex is equally affected by the disease. The disease is prevalent in lower income groups rather than in the higher income groups adding much to their economic burden.

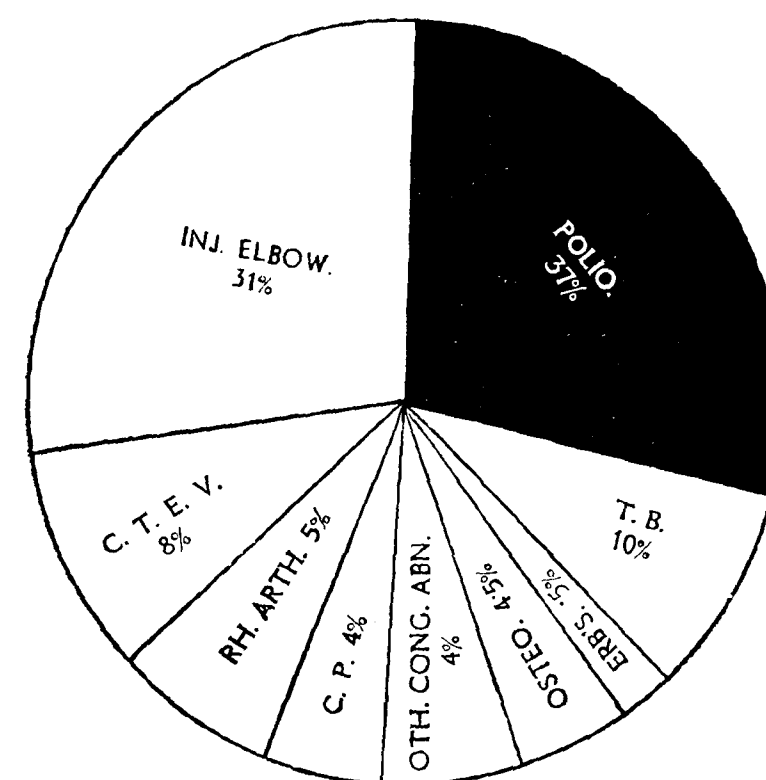
Diagnosis of the disease is usually from the clinical data *i.e.* from the local condition and general reaction of the patient such as malaise, temperature etc. In most cases with the help of X-ray, diagnosis will be certain.

If satisfactory treatment is to be undertaken these cases of bone and joint tuberculosis should be diagnosed as early as possible. It is unfortunately true that the majority of cases come to the hospital with established deformities and multiple sinuses. The general practitioner children which does not clear in a few weeks bed rest, should be investigated for tuberculosis. By only concentrating on such cases with adequate clinical observation, it is possible to minimise the awful damage and irreparable deformities that set in the course of tuberculosis infection of joints.

Our rule is to admit such suspected cases for observation as joint cases and simple immobilisation and bed rest are enforced. If a case is non-tuberculous the clinical improvement both in the local and general condition will be definite after 6 weeks of bed rest, if there is improvement in local condition the joint is set free and movement is encouraged. If the improvement is maintained the case is decided as non-tuberculous, of-course confirmed by a skiagram. It must be realised that radiological evidence is always delayed for some months to be reliable. If there is the least suspicion the bed rest is enforced for a further period of 6 weeks and the case reviewed at the end of 3 months.

Polio X other Diseases

GENERAL HOSPITAL.



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JOINT TUBERCULOSIS

IN 1950

TOTAL 87

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10

T.B. KNEE

5

T.B. ANKLE

8

T.B. ELBOW

4



At this stage, one would like to emphasise the similarity of rheumatoid arthritis and tuberculous joint. Both show rigidity and early decalcification in the bones. It has come to our notice that mistaken cases of Rh. Arthritis have been immobilised in rigid plaster cases only to produce ankylosis of more than one joint. Therefore it is essential that these early cases should be reviewed once in 3 months to establish definitely the diagnosis and to follow appropriate treatment of Rh. Arthritis will be definitely early mobilisation of joints. In such cases negative Mantoux test might help to exclude tuberculosis in children though a positive one is of no significance. Even biopsy does not establish the disease as tissue that has been examined might not have tubercular infection. So a negative biopsy is not of as much significance as positive biopsy.

Treatment: It is sad to note that there are absolutely no facilities to treat these children in general hospitals as well as in tuberculosis hospitals as no provision is made for admission of such cases. It is not possible to state authoritatively the results of the treatment that has been followed by us is very good as most of them are not under our direct supervision. I hope a day will come when there will be a separate children's hospital for tubercular patients to give sanatorium type of treatment as is done in western nations, where they have not only facilities for treatment but also for education along with treatment as the treatment itself lasts for a period of 3 to 4 years.

Our method of treatment is by bed rest and immobilisation of the joints by the simplest technique possible. In our practice we have found to be successful the use of frames such as Jones-abduction frame for the hip and spine cases, Thomas splint for the knee and the crab splint for ankle and wrist. We are definitely against immobilisation in plaster casts. In practice we found, the plaster of paris casts are not tolerated well with the high temperature and humidity of the atmosphere in South India. Invariably, the children lose their general health, the plaster begins to shrink and produces pressure sores. Moreover, the presence or absence of cold abscess could not be recognised till the plaster begins to stain.

The sanatorium type of treatment was not always possible to follow as most of them could not afford separate well ventilated houses and also proper food because of the famine conditions. None the less with the administration of streptomycin and P. A. S. prognosis has changed towards the favourable side. The dose that is given by us is streptomycin

$\frac{1}{4}$ gr. a day to a total of 5 to 10 grames and P. A. S. tablets average about '8'. In all cases temperature used to come to normal and the complications such as cold abscess and paraplegia have improved remarkably.

2. Cold abscesses if they occur generally clear with adequate enforcement of rest and antibiotics. If indicated, they are aspirated but in children repeated aspiration is not possible and moreover the pus is very often thick. So we have no hesitation in making a "one inch" incision, empty the cavity under penicillin and streptomycin umbrella, supplemented by local streptomycin and the incision is closed by primary suture. The results are indeed, gratifying. Ensuing pictures show the types of splints that have been used by us in treating these cases. No operative treatment has been done in any case.

In conclusion I would like to point out that there is an urgent need for hospital beds for cases of bone and joint tuberculosis so that an organised and effective treatment can be done with benefit for the patient, for the institution and consequently for the nation.

My thanks are due to Lt.-Col. V. R. Thayumanaswamy. M.S., F.R.C.S., M. Ch. (Ortho.), Professor of Orthopaedics and Orthopaedic Surgeon, Government General Hospital, Madras, for giving his permission to present this paper from the department.

*—By the kind courtesy of the Editor, Indian
Pediatric Journal Calcutta, and the authour—Ed.*

—★—

Throw away all ambition beyond that of doing the day's work well. The travellers on the road to success live in the present heedless of taking thought for the morrow. Live neither in the past, nor in the future, but let each day's work absorb your entire energies and satisfy your widest ambition".

—Sir William Osler.

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Take interest, I beseech you, in those institutions which are designated under the expressive name of laboratory. Demand that they may be multiplied and advanced—they are the temples of wealth and of future.

—Pasteur.

Abscess Lung

A. VARADARAJASUNDARAM

INTRODUCTION: The Chief suppurative conditions of the lungs are abscess, gangrene and bronchiectasis. Clinically it is difficult to differentiate these conditions as they have common symptoms, as profuse offensive expectoration, cough and temperature. The lung abscess is defined as any circumscribed collection of pus in the lung tissue, with the exception of softened tuberculous areas and bronchiectatic accumulation; whereas in the case of gangrene lung, the condition is diffuse and putrifacative. The incidence of bronchiectasis compared to lung abscess is greater, and many cases of bronchiectasis present themselves as lung abscess.

Incidence: There is no direct bearing upon the age and sex regarding the incidence of this condition. There seems to be preponderance on the male side. The abscess may be single or multiple. Both the lungs may be involved but it is more common in the right lung. Although it is said that the upper lobe is more frequently involved than the lower, this is not always true.

Aetiology: Etiologically, the lung abscesses may be classed under three groups:—

- (1) Those due to aspiration of foreign bodies;
- (2) Those following surgical operations;
- (3) Those complicating pneumonia.

Apart from these, certain other conditions are also the contributory factors in the formation of lung abscesses. They are multiple emboli from septic foci elsewhere in the body, ulcerative endocarditis, extension of suppuration from the neighbouring organs—e.g. subphrenic abscess,

infected hydatid and other cysts, septic bronchiectasis, invasion of the substance of the lung by malignant growth of oesophagus, rare mycotic pulmonary infections like actinomycosis. After an attack of asthma the inspissated mucous may block the bronchus or the bronchiole and this may lead to segmental collapse of the lung which may later become an abscess.

The most important thing to be remembered always is that tuberculosis and bronchogenic carcinoma are aetiological factors of lung abscess. The aetiology is not complete without mentioning a few words about pulmonary amoebiasis, a condition which is difficult to diagnose. This responds to the specific therapy and a therapeutic test is perhaps the ideal method in diagnosing such a condition, in the absence of other direct evidences of amoebic infection. Therefore an abscess situated at the right base of the lung should always be eyed with suspicion and more so when the outline of the right dome of the diaphragm is indistinct. It is not to be forgotten that amoebic abscess lung is mostly secondary to amoebic abscess liver. Post-operative conditions are nowadays rare though it was common in the early days of general anaesthesia. This is only an aspiration phenomenon from the inhalation of blood, mucus, portions of soft tissue and other infective material into the respiratory tract. Today, with better lines of diagnosis and treatment the incidence is rare. If the resolution is not complete in pneumonia, the unresolved portion may become an abscess later. This undoubtedly represents an appreciable proportion of the cases in which no definite physical signs are noticed in the patient.

Clinical Course—Symptoms: Practically in all cases, cough is a prominent symptom. Localised pain in the chest is equally common. Expectoration of sputum occurs sooner or later. This depends upon the establishment of communication between the cavity and the bronchus. Initially there may be fever accompanied by cough and expectoration. For some time, the cough diminishes. But the fever remains. Subsequently the temperature may rise gradually and the patient becomes toxic. Cough increases. There is more or less a sudden outburst of coughing. A large quantity of offensive purulent material is expectorated. This is succeeded by a drop in temperature and by a relative period of apyrexia. In some cases there is reaccumulation of pus. Then the temperature once again rises and the process is repeated intermittently. But in most of the cases no such characteristic history is given. They simply complain of cough and expectoration continuously for weeks or months unaccompanied by any physical sign. In almost 70%

of the cases of the lung abscesses haemoptysis is also frequently noticed. There is always considerable increase in the leucocytosis (upto 20,000 or 30,000 per c.m.m.)

Sometimes the illness presents itself apparently as a pneumonia obviously, complicated by pleural effusion or empyema. To start with the fluid may be clear, straw coloured and sterile. When it is centrifuged and examined, polymorpho nuclear leucocytes are found. Later, varying according to the severity of pulmonary infection, a further diagnostic aspiration reveals that the effusion has become purulent.

In cases with more insidious onset, the clinical picture is liable at first to be regarded as one of Influenza. As the illness takes its course, influenzal broncho pneumonia is suspected. Finally the diagnosis becomes clear when patient suddenly coughs up a large quantity of pus with the resulting cavitation which can be seen in the X-ray films.

Signs: The signs of lung abscess depends on the situation and size of it and on the surrounding infiltration. There may be pleural rub, a local area of dullness to percussion and weak breath sounds owing to the congestion and oedema around the abscess, crepitations may be heard. Signs of cavitation can be detected if the pus is evacuated and the bronchus is open allowing the entry and exit of air during respiration. If the drainage is inefficient, clubbing of finger occurs. In the examination of sputum, pus cells mixed growth of organisms, elastic tissue, pieces of necrotic lungs, are all found in acute destructive cases.

Bacteriology: There is no specific bacteriology about lung abscess. The most common organisms are streptococcus, staphylococcus, pneumococcus and various saprophytic organism including spirochetes and fusiform bacilli. When there is foul odour which accompanies pulmonary suppuration, it is an indication of extreme necrosis and gangrene, where anaerobic organisms are probably present in association with common pyogenic bacteria.

Morbid Anatomy: A comprehensive picture of the morbid anatomy of the lung abscess is not possible for the appearances vary very widely in different stages of inflammatory processes. In the early phase there is suppurative pneumonitis. This is surrounded by a zone of inflammatory reaction. There is no distinct line between the normal and diseased part of the lung. When the inflammatory reaction continues, there is breaking down in the centre of the affected area. The ultimate course of the disease depends upon the position of the lesion, the character of infection and

occurrence or non-occurrence of drainage by communication with the bronchial tree or with the pleural cavity. If there is drainage, the cavity is formed. The character of the cavity depends upon whether the condition is acute, subacute or chronic. In the acute stage, the abscess cavity is soft and friable. The contents are the necrosed lung tissue. In the subacute condition, the wall is fibrous and the interior is granular. In a chronic abscess, the wall is smooth. It may also show epithelialisation of its wall from the bronchus. The microscopic appearance is that of an abscess with dense infiltration of polymorpho nuclear leucocytes. The alveolar walls are destroyed. As the condition becomes chronic, fibroblasts multiply and the wall of fibrous tissue is built up around the abscess.

X-Ray Appearance: This varies considerably. As a general rule the appearance of a rounded opacity in the lung field is an early finding. If there is a rupture into the bronchus, there will be a clear area in the centre of the opacity when the film is taken after expectoration of pus contents. In conjunction with the clinical history, if there is a horizontal level of the fluid inside a clear area it may be practically diagnostic of lung abscess.

Complications of Lung Abscess: The commonest complication of the lung abscess is dry pleurisy. This may develop into empyema or pyopneumothorax when there is rupture into pleura. In some cases pericarditis may develop. Occasionally metastatic abscess is formed in the brain. Meningitis is rare and it is a very serious complication. The important sequelae are fibrosis of the lung with bronchiectasis, pleural adhesions and rarely indurative mediastinitis.

Prognosis: Though the prognosis is said to be grave, with early diagnosis and surgical treatment supplemented by chemotherapy better results can be anticipated. But in most of the cases where there is rupture into the bronchus recovery is incomplete. In pyemic cases, death is inevitable.

Statistics: From the year 1931 upto 18-8-52, 2013 autopsies were performed in the Department of pathology Madras Medical College, Madras. Out of these, 523 that is 21.2% of the deaths were due to the diseases of the lungs. The following table shows the relative frequency of the diseases of the lungs.

NUMBER OF AUTOPSIES DONE: 2013.

Total number of deaths due to pulmonary diseases: 523.

Diseases.	No. of Cases.	Percentage.
Pulmonary tuberculosis	226	43.2
Non-Suppurative pneumonia	190	36.3
Suppurative lesions:—		
Lung abscess, Gangrene, Bronchiectasis, Actinomycosis.	48	9.1
Circulatory Disturbances:—		
(Primary and secondary)		
Emphysema	37	7
Oedema		
Fibrosis		
Cystic Diseases		
Neoplasms	4	.7
Miscellaneous:—		
Empyema	17	3.2
Pleurisy		
Embolism		
Collapse		
Bronchitis		
Pulmonary Amoebiasis	1	.19

In this series 48 cases of suppurative conditions were met with. That is an incidence of 9.1%, 42 were in men and 6 in women, the ratio of the sex incidence being 7:1.

(Statistics from the hospital where the influx of admission is mainly from the male population).

AGE INCIDENCE:

0 to 10	....	....	2 Cases.
20 to 25	....	....	5 "
26 to 30	....	....	8 "
31 to 35	....	....	6 "
36 to 40	....	....	6 "
40 to 45	....	....	4 "
46 to 50	....	....	5 "
51 to 55	....	....	5 "
56 to 60	....	....	4 "
61 to 75	....	....	2 "

An incidence of 56.2% is found between 2nd and 4th decades.

From the study of the above statistics, we find that the incidence of death in diseases of chest is often due to pulmonary tuberculosis, and deaths due to lung abscess occupy only a second place.

From the post-mortem appearance, we observe that those who die are run down individuals and debilitated persons in whom the poor resistance is responsible for the destructive lesion. In cases where the resistance is good, the abscess gets localised and surgical treatment supplementing modern chemotherapy can save the lives of the patients. With increased knowledge of lung abscesses and better surgical technique at our disposal, if early attention in the form of surgical drainage and chemotherapy is instituted before the patient's general condition deteriorates, the morbidity and mortality can be minimised.

Death in some cases especially those who come in late stages of the disease is due to neglect and mishandling. In these patients neither medical nor surgical treatment will be of any avail.

Many patients survive the illness, as drainage in the lung abscess is usually good and spontaneous resolution often occurs. With potent antibiotics at hand such as penicillin, streptomycin, aureomycin etc. and added surgical measures such as bronchoscopic drainage, lung abscess can be made a less fatal disease than it was in previous decades.

I am greatly indebted to Dr. D. Govinda Reddy, M.D., Professor of Pathology for his kind help & encouragement in preparing this article and also to Dr. K. Ramachandra, M.D. & Dr. (Miss) Anjali, B.Sc., M.B.B.S., for their valuable suggestions and guidance.



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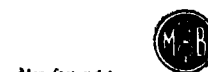
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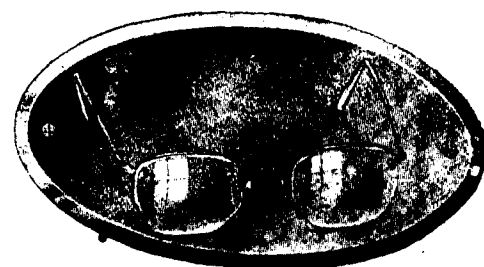
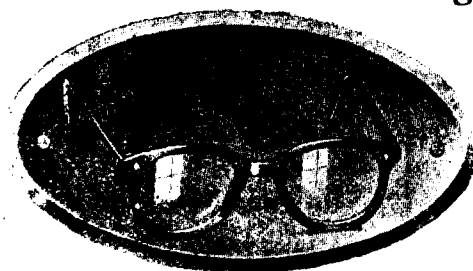
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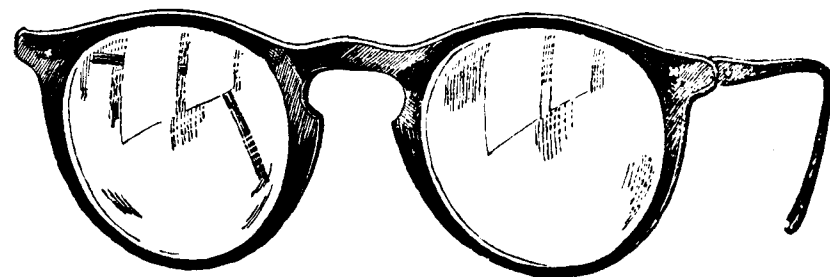
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The place of Tomography in Radio-Diagnosis

Dr. A. N. K. MENON, M.B.B.S., D.M.R., D.M.R.P. (Lond.)

Lecturer in Radiology, Madras Medical College and
Radiologist, Bernard Institute of Radiology.

TOMOGRAPHY (Planigraphy, Stratigraphy) is a recently developed method of radiography which shows one selected plane or stratum of the body clearly defined, while blurring the shadows of all structures lying outside that plane. An ordinary radiograph sometimes fails to reveal the presence or extent of lesions due to their being obscured by supervening structures. In Tomography only one plane, or strictly layer, is reproduced sharply in the radiograph, while the object details above or below this plane is blurred so as to obliterate supervening structures. One of the methods of Tomography is where the pre-determined layer of the body is studied to the exclusion of other areas above and below the section under observation. In this case it is necessary for the observer to determine the depth at which study is to be made. If this is not possible serial roentgenograms are made at varying depths, usually at distances of 1 cm. apart. This may reveal the presence of cavities etc., which otherwise may not be seen because of opaque structures which are supervening upon them in the ordinary radiograph. In this way it is possible to examine the skull, chest, or other regions of the body without the superimposition of other confusing shadows. The method has the widest application in the study of the tumour of the lungs, and mediastinum, cavities, patches of atelectasis, and occlusions of the bronchi. It is possible to visualise the divisions of the bronchial branches as small as 3 to 4 mm. in diameter and very small cavitations can be outlined. Distortion, termination, or occlusion of the bronchi is demonstrable. Mediastinal tumors or growths in the lungs near the midline may have their true location and point of origin proven. Non-opaque endobronchial foreign bodies are revealed whereas they may not be visualised on routine roentgenograms. The larynx and paranasal sinuses afford a favourable field for study by this method. In the vertebra, particularly the cervical region, overlying shadows such as the base of the skull and mandibles cause great difficulty in diagnosis. The first and second cervical vertebrae

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are particularly amenable to observation by this method and fractures of the axis and atlas which otherwise might not be shown can be clearly brought into view.

Regarding the history of Tomography, Bocage (1921), Ziedses des Plantes (1921—25), Vallebona (1933), Grossmann, and Twining, are the pioneers who worked in this field. Grossmann's apparatus consists of a pendulum carrying the tube at its upper end and the film-carrier at its lower end. Twining modified the apparatus into a simple type of tomograph in which the tube and the Potter-Bucky carrier are coupled together by a simple lever which transmits the motion of the tube through connecting rods, reciprocally to the carriage. The Tomography can be done either in the Horizontal direction or in the vertical direction.

The principle of Tomography is simple. The X-ray tube and the film are connected by means of a bar pivoted at a certain spot. If this is so arranged that the tube moves in the opposite direction to the film during exposure, then object points in the plane of the pivot will be reproduced on the same spot of the radiograph in all positions of the tube and film. On the other hand, points above or below the plane of the tube and film connecting bar pivot will be reproduced at different spots in the radiograph, depending upon the position of the tube and film. It can be seen that the infinite number of images produced whilst the film and tube are moving between the limits of their respective lines of travel, will result in a single sharp image of the left hand object (*i.e.* in the plane of the pivot), and a completely blurred image of the right hand object (*i.e.* above the plane of the pivot).

An attachment called the "Sectograph" is an example of an auxiliary apparatus for fitting to an x-ray couch. It consists of a rod, pivoted about the point. The position of the pivot can be adjusted to correspond to different body layers by alteration of the position of the pivot arm, the height above the couch top being indicated by an engraved centimetre scale. The lower end of the rod is secured to the Potter-Bucky diaphragm by two locking handles; the upper end of the connecting rod fits into a socket on the tube carriage.

Method of Operation: When required for use, the "Sectograph" is attached by means of a clamp to the side member of the couch top, the lower end of the arm being attached to the Potter-Bucky diaphragm, and the upper end inserted in the hole provided in the tube carriage. With the patient in position, the arm of the "Sectograph" is moved to the vertical, and the layer selector adjusted to the correct height above the couch top. The tube is then set to a distance of not less than 34 ins.,

the flanged collar moved to its lowest position, and the arm moved to the left. The action of pushing the tube stand along its track sets the diaphragm in motion and actuates the exposure switch. A motor driven model is also obtainable in which all movements are controlled from the switch table.

The apparatus is normally arranged so that the travel of the tube from one extreme to the other occupies two seconds, although by re-adjustment it can be made to do it in one second. The modern apparatus for tomography used now is the Universal Planigraph of (Siemens Company).

Among the many advantages of this apparatus are, the whole apparatus can be rotated altogether with the patient in the vertical or horizontal positions. Some of the advantages are:

- (1) The depth of the layer of which radiograph is to be taken can be exactly adjusted.
- (2) Provision is made for taking radiographs of layers of various thickness.
- (3) Aimed layer radiography is possible. For this purpose provision is made for Fluoroscopy, which enables the depth of a cavity or of a foreign body to be predetermined, thus enabling a small film size to be used or several radiographs to be taken on one film by means of a serial changer device which forms an integral part of the equipment.
- (4) The Universal Planigraph is also suitable for standard radiography as a motor driven tilting table with built in moving Bucky grid. In addition it is suitable for survey Fluoroscopy.

Applications of Tomography: (1) In this application to study of the normal lung anatomy, the study of the anatomy of the Pulmonary vessels and Bronchi has been made by Greineder. (2) This method shows very clearly cavities invisible in ordinary radiograms, because it increases the contrast between the structures in the selected plane, which are held on the film throughout the exposure, and structures in other planes, which are blurred and diminished in density by the movement. Two kinds of cavities may thus be brought into prominence: (a) Thin-walled cavities, in tuberculous disease, which are surrounded by normal or mottled lung fields, and (b) thick-walled cavities, or areas of softening and caseation,

surrounded by dense consolidations, which are normally either difficult to be sure of or actually invisible. Not only may the existence of the cavities be thus proved, but valuable information as to the character of their walls may be obtained. Many abscess cavities which in plain radiograms have shown merely a vague translucent area with a fluid level are proved by tomography to be multilocular, or honeycomb-like, or to be partially divided by septa projecting into their lumen. Portions of necrotic lung tissue lying within abscess cavities can be shown. Nodulation of the wall of the cavity is sometimes a prominent feature in tomograms of malignant abscesses. The drainage bronchus of a cavity is often plainly visible in a tomogram, though the corresponding plain radiogram has failed to show it. If the bronchus, on the other hand, has been obstructed by growth, the tomogram shows this very clearly without the use of lipiodol. Even the presence of a large effusion, causing complete opacity around the neoplastic lung, or gross atelectasis, is not an insuperable obstacle.

Tomography is also most helpful in the diagnosis and localisation of various cysts and hematomas and in the differential diagnosis of many intramediastinal conditions. It should be used as a routine for the detection of enlarged glands in bronchial carcinoma. The following are some of the tomographs taken in this Hospital which I am demonstrating now.

1. Mrs. Meenakshi - Female - Aged 50 - sent from Elgin Ward for Tomography on 11-4-50. Opacity Rt. base of Lungs. The tomograph shows Rt. hilum enlarged. Two cavities present-one in the hilar region and another below. These cavities are localised 4 to 6 cms. behind the anterior chest wall. Nodulation seen within the cavity. Slight stenosis in the Rt. dome of diaphragm raised up. Suggestive of cavernous type of malignant growth and a primary bronchogenic Carcinoma. Advised Bronchogram confirm the Tomographic report.

2. Rajagopal: Male 50 sent on 18-4-50 from Munro Ward. A diffuse opacity on the Rt. upper lobe was seen in the plain radiograph. The Tomograph shows 8 to 10 cms. posterior and anterior to the chest wall on the upper lobe cavities with Pneumonitis around it. Suggests Abscess of the Lung.

3. Veera Chetty: Male - 45 - sent on 18-10-51 sent by Dr. C. M. Leelavathi with a provisional diagnosis of Cancer Larynx. cords and the diagnosis of Carcinoma of the Larynx involving the vocal cord was established and confirmed later by Laryngoscopy.

4. Kunjuvaru: Male - 50 - Case of Bronchogenic Carcinoma Rt. Lung was sent for X-ray of Chest for Check up.

I took tomograms and at a distance of 12 cms. posterior to the chest wall. Enlargement of hilar shadow and cavitation and nodulation seen projecting into the Lt. hilum. The Lt. dome of the diaphragm also paralysed and the nodulation projecting into the Lt. Hilum clearly shown. It confirms the diagnosis of Bronchogenic Carcinoma. Tomography must not be done as a routine and must be reviewed for the diagnosis of special case.

In the hands of experts it is a real boon to the suffering humanity. It has got a definite, sure, and honoured place in Radio-Diagnosis.

I am thankful to the Director B. I. R. and to the Dean, General Hospital, Madras for giving the permission to publish this article and for their valuable help.

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Chest X-ray diagnosis by Riboo; Medical Photography and Radiography by Long more Text-books of X-ray diagnosis by British authors.

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QUEER REASONS—

In Lansing, Michigan, a man wed only four weeks asked for a divorce on the grounds that his eyeglasses were out of focus when he married.

—Sydney J. Harris in Chicago Daily News.

* * *

Questioned by police about his habit of walking backwards, a man in San Francisco replied; "I like to see the expression on the faces of people who are following me."

—Los Angeles Tribune.

* * *

A woman on trial for murdering her husband was acquitted by the efforts of one little lady on the jury. Her reason: "I just felt sorry for her. After all she was a widow".

MODERN TREND—

The "modern trend" in medical practice — a trend which set tradition on one side and reduces the doctor to the status of a stilted pseudo-scientist, intent on disease as such and on its discovery by clinical examination, test and other laboratory aids, and forgetful that the patient is a sick man or woman, with his or her own frets and foibles, aversions and raptures.....The origin of the fault, for fault it is probably lies in the early and incorrect use of the word "case". When the embryo doctor says that his case is doing well after operation he will probably deny with some vigour that he is taking from the patient some of his human attributes, but, unconsciously perhaps.....he has identified the person with the disease and has set going a mechanism which may..... help him to adopt what we have called the "modern trend".

—Quoted from *Lancet*, 2: 1200, 1951.

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Clinical Quiz

1. Who discovered the use of Digitalis?
2. What is Folic Acid? When is it best indicated?
3. What are the three main haematological features of acholuric jaundice?
4. In which congenital heart disease is cyanosis maximum and why?
5. In what neurological conditions is pure lateral Sclerosis seen?
6. What is the description of the face in Parkinsonism?
7. Can you mention the non-syphilitic conditions in which Argyll Robertson's Pupil is seen?
8. What is the heart rate in (1) Beri-Beri (2) Myxoedema.
9. Mention in what vitamin deficiency states skin lesions occur. When do you get toad skin?
10. In what acute infectious disease is bull-neck seen?

(For Answers See Page 66)

On Nothing in Particular

JAYAKUMAR.

IT was like any other heap of ruins, drab and undistinguished. It presented the same sorry picture—a few stones perched precariously on one another, mounds of rubble, of crumbling brick and mortar, and an occasional pillar rising up, defiantly as it were, amidst the ruins all around. There was the general air of decay and utter desolation that existed about these places. The only living beings around were a couple of crows more tenacious than the rest and a few mournful-looking pariah dogs roaming about.

That place was no Garden of Eden but it cast, strangely enough, a sort of spell on you and compelled you to see it in all its former glory. Who can tell what it might have been some centuries back?—some temple or palace, or perhaps just the humble dwelling of some mere mortal who lived like so many of us and died "unhonoured, unwept and unsung".

You could see the granite walls rising again—walls which stood four square to all the winds that blew and were meant to stand so till the very end of time. Before the mind's eye arises a transient vision of tall minarets and gilded domes glowing in the sunshine.

You could almost breathe the atmosphere of culture, of philosophy, of learning, of art and music and of science. To your straining ears they come, the learned discourses waxing loud and long over perhaps the ultimate destination of the soul, a profound principle in Ayurveda, a knotty problem in abstract Astronomy or a subtle variation of some complicated raga.

You saw walls covered with works of art, with colourful paintings and rich tapestries—depicting Gods and Goddesses, lives and loves, battles

and beasts. You walked through marble halls with priceless carpets on the floor and soft silken hangings everywhere.

You could imagine the people then, their simple ways of life and their devotion to God, the throngs of devotees in the temples at eventide, the ash on their foreheads and rapture on their faces. Floating over the waves of time you would hear the soft music of a veena and the jingle of bells on dancing feet.

And so the spell begins to envelop your senses and gradually overcomes you. But somehow the scene before you does not quite fit in with what seems to be the natural order of things. In fact, on closer observation, one sees long subterranean passages leading as it were into the very bowels of the earth and cubical enclosures with walls of iron. Could this be some dungeon of yore where unfortunate creatures had to last out the rest of their miserable existence, perhaps expiating sins they never committed. You almost hear the rattle of the chains and the shrieks of the victims. What gruesome tales of sorrow and tears, of courage and fear, of hope and dark abysmal despair these aged walls would tell us if they could.

But, just then a couple of yellow "Chariots" turn up on the scene and disengage themselves of seething humanity. The gay, colourful crowd swarms over the place pointing, probing, gesticulating, chattering and giggling. The spell is broken and the stampede jerks you back to reality. You find the words 'incinerator', 'dismantled', 'out of use', '10 years' forcing their way into your consciousness. It dawns gradually on you that you have been standing before the incinerator for rubbish belonging to the Corporation of Madras, dismantled ten years ago. You struggle hard but can ugly unromantic facts keep out fanciful dreams?

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Man is the only animal of which I am thoroughly and cravenly afraid. I have never thought much of the courage of a lion-tamer. Inside the cage he is at least safe from other men. There is not much harm in a lion. He has no ideals, no religion, no politics, no chivalry, no gentility; in short, no reason for destroying anything that he does not want to eat.

—Bernard Shaw.

A Case of Hypertensive Failure with Alkaptonuria

Dr. P. M. PALANI, M.B.B.S.

ALKAPTONURIA: This very rare condition is an inborn error of metabolism. Tyrosine and Phenyl Alanine are incompletely broken down and homogentisic acid (para dihydroxy phenyl acetic acid) is excreted. Homogentisic acid is formed both endogenously and exogenously; Its daily output is 4 or 5 grams.

Fresh urine is of normal colour. It turns brown in a few hours, and eventually becomes black. Darkening is due to conversion of homogentisic acid by atmospheric oxygen into brown or black melanins. Oxidation is more rapid with an alkaline than an acid reaction, but does occur slowly though the reaction be acid. When urine is allowed to stand without addition of a preservative, it becomes alkaline in a few hours by bacterial action and turns brown; if not disturbed it darkens from the surface onwards. If alkali is added in excess, fresh urine darkens in a few seconds particularly well shaken.

Tests: 1. When Alkapton urine is boiled with Benedict's qualitative reagent the mixture assumes a strikingly greenish brown or greenish black hue, the precipitate at first appears dirty or cuprous oxide is evident. With Fehling solution a similar appearance is obtained but the heated mixture is black, the deeper pigmentation being due to the larger proportion of urine in Fehling's than in Benedict's test. The precipitate at first appears greyish black but later separates as red. If alkapton urine is layered upon Benedict's or Fehling's solution a brown ring forms at room temperature owing to action of alkali of the cupric solution.

(Alkapton urine is neither dextro-rotatory nor laevo-rotatory and is not fermented by yeast).

2. It reduces ammoniacal silver nitrate solution and turns black.

3. It turns 5% ferric chloride solution into evanescent green or blue colour.

Patient Asha Bee female 40 years was admitted in Victoria Ward on 25—8—51 for breathlessness and odema both legs. On examination she was having a left Ventricular failure secondary to hypertension. B. P. was 230/150. She gave a history of recurrent attacks of breathlessness, pain in the chest and giddiness since last 6 months.

During the course of the treatment, one day the patient complained of passing dark coloured urine. The urine on examination was negative for blood tests (Both Benzidine and Microscopic). The urine was also sent for spectroscopic examination. The result was again negative.

The next day a fresh morning sample of urine was examined and it was normal in colour. It was only the overnight specimen which when exposed to air, become dark brown in colour. Hence the possibility of 'Alkaptonuria' was suspected and the urine was sent to the bio-chemistry department for 'Alkaptonuria' test and all the tests were positive.

The object of including this case of hypertensive failure with Alkaptonuria is the rarity of this condition.

Ward: Victoria. Name: Asha Bee. Age: 40 years. Caste: Muslim. Address: c/o A. M. Md. Ismail, Books Road, Ottery P. B. Post, Madras. Admitted on 25—8—51 Discharged on 12—10—51.

Diagnosis : Hypertensive failure with ALKAPTONURIA.

Complaint: Pain in the chest and breathlessness since 1 year.

Previous illness with dates: Since two years she is having breathlessness on exertion. Since one year she is noticing swelling of the ankles more towards the evening. Periods regular, since 8 months the menstrual flow is scanty. She had bleeding from the nose about 15 years back coming on and off. She had giddiness and fell unconscious about one year back twice. Patient also complaints of severe pain in the left knee since 2 years.

Habits (diet, alcohol etc.): Non-Vegetarian.

Family History: Nobody has had similar breathlessness. Married—10 years back—husband and one daughter alive.

History of present illness: She had sudden severe pain at the lower end of sternum with slight breathlessness at 2 a.m. in the night. She feels giddy occasionally on standing. Since one year her micturition is very scanty. Patient gives history of passing dark coloured urine in January 1951 when she was admitted in Hobart Ward.

Condition on admission: Patient is a well built stout individual of about 40 years, flabby, odema of extremities present, Not anaemic, teeth fairly clean, Tongue moist and clean. Tonsils not enlarged. No evidence of any pigmentation of the ear lobes.

C. V. S.—Pulse: Volume and tension good.

Inspection: No precordial bulge, no veins seen over the front of the chest. Apex beat not visible.

Palpation: Apex beat palpable in the 6th interspace $\frac{1}{2}$ " outside midclavicular line and it is heaving in character. No thrill is felt.

Percussion:

3rd rib

$\frac{3}{4}$ " lateral to
Sternal line

6th space $\frac{1}{2}$ " outside
midclavicular line.

Auscultation: Heart sounds normal, except that the second sound is loud in mitral and pulmonary areas.

Alimentary System: Abdomen distended—no visible veins. Umbilicus is everted. No free fluid in the abdomen. Liver 1 finger breadth enlarged and is slightly tender. Spleen not enlarged. No other palpable mass is present.

Respiratory System: Inspection: Nil abnormal V. F. diminished over both the bases. Percussion: dull on both bases. V. R.: diminished in both bases. Auscultation: Breath sounds harsh on both sides. Crepitations heard in both bases.

C. N. S.: Nil abnormal.

Investigations: B. P. 230/150 mm. of Hg. Urine: Acid, No albumin, No sugar, Benzidine test for blood Negative.

Blood: R. B. C. 3 Millions, Hb. 70% W. B. C. 7000.

D. C.: P₆₂ L₃₀ M₅ E₃

Faeces: Frank Blood in the motion. Blood Urea: 30 mgms. %

20/9 Spectroscopic examination of urine—No Haemoglobin derivative detected.

22/9 Urine Culture—Sterile.

22/9 All tests for Alkaptonuria positive. Homogentisic Acid present.

Total Serum Proteins 5 gms. %

Albumin 3.1 gms. %

Globulin 1.9 gms. %

Serum Alkaline Phosphatase 11 units.

E. C. G. Left axis deviation.

X-Ray Chest: Marked enlargement of the Cardio-Vascular shadow with congestion of lung fields.

Thymol Turbidity 6 units.

Glucose Tolerance Test:

28/9 Fasting blood sugar 65 mgms %. After $\frac{1}{2}$ hour 88.9 mgms %.
After 1 hour 100 mgms %. After 1½ hours 114.3 mgms %.
After 2 hours 93 mgms %.

Urine Sugar: Slight reduction due to Alkaptonuria.

Progress and Treatment:

24/8 Admitted with breathlessness Vague pain in the chest—moist sounds all over lung Fields.

Patient started on oxygen. 10 cc. of aminophylline with 20 cc. of 25% glucose given I. V.

B. P. 230/150 mm. of Hg. Morphine gr. 1/6 Atropine gr. 1/100 Given I. M.

25/8 Patient slept well. B. P. 200/125. Vasesection done. 10 ounces of blood let out.

26/8 Patient slept well and very comfortable without oxygen. Mersalyl 1 amp. given. B. P. 145/105.

27/8 Result not very good.

28/8 Patient has passed altered blood in the motion. B. P. 114/72.

29/9 Patient slept well. Condition fair. Mersalyl 1 amp. given I. M. Mist. Ammonium Chloride Oz. III. Oz. I t.d.s. Digoxin 2, one b.d.

3/9 General condition fair. B. P. 150/75. Passed 32 oz. of urine.

4/9 Passed 32 oz. of urine. Repeat all.

5/9 General condition fair. Passed 20 oz. of urine. Repeat tablets 2, one b.d. Mist. Carminative Oz. III. Oz. I t.d.s. Phenobarbitone grs. II Lactose qs. F. P. 2, one b.d.

6/9 General condition fair. B. P. 160/75. Nil abnormal.

12/9 General condition fair. Repeat all. Aminophylline 5 cc. given I. V.

17/9 General condition is fair but patient is having severe breathlessness as before. B. P. 180/110.

20/9 General condition fair. Still passes high coloured urine, no blood detected. All drugs stopped.

22/9 Urine for Alkaptonuria positive. Urea drachm 1. F. P. 4. one 6th hourly. Homogentisic acid present.

29/9 B. P. 180/90.

30/9 B. P. is coming down. B. P. 204/96. Digoxin 2 tablets. One b.d.

3/10 174/80. (B. P.)

4/10 B. P. 184/84. Repeat tablets. Mersalyl 1 amp. given.

6/10 B. P. 176/98.

10/10 Patient is feeling much better. Repeat all. B. P. 200/100. Mersalyl 1 amp. given I. M. Discharged on 12—10—51.

REFERENCE:

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Chemical Methods in Clinical Medicine by G. A. Harrison.

This case is reported by the kind permission of Dr. P. Ratnaswami, B.A., M.D.

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BOOMERANG—

One Night at a stuffy party, John Barrymore was trying to hide from the other guests. A notorious bore searched him out however, and sat down beside him. "It's good to see you, Mr. Barrymore", he said. "You're the first person I've met tonight worth talking to".

"I must say", replied Barrymore, "that you're more fortunate than I".

—E. E. Edgar.

Lady Nancy Astor, who is noted for her sharp tongue, once got annoyed at Churchill. "Winston", she said sharply, "if you were my husband I'd put poison in your coffee".

"Nancy", replied Churchill, "if I were your husband I'd drink that coffee".

—Bernardine Kielty in Book of the month club news.

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Answers

1. William Withering.
2. Vitamin B' Complex - Sprue Syndrome.
3. Micro Spherocytosis. Reticulocytosis. Increased fragility.
4. Transposition of vessels and Admixture of bloods.
5. Erb's syphilitic spinal paraplegia. Subacute combined degeneration. Amyotrophic lateral Sclerosis. Lathyrism.
6. Mask like facies with a reptilian stare.
7. Diphtheria. Encephalitis. Pinoaloma.
8. (i) Tachycardia. (ii) Bradycardia.
9. (i) Nicotinic Acid deficiency - Fish scale dermatitis.
(ii) Shark skindermatitis of face and scrotum—in Riboflavin deficiency. Phrenodermia - Toad Skin—Deficiency of Fatty Acids.
10. Diphtheria.

Newer Concepts of Inflammation

D. BHASKARA REDDY, M.B.B.S.

LONG before the days of medicine and medical Sciences man noticed that injury was followed by definite series of changes in traumatised tissue. It was Celsus in first century A. D. who named the famous cardinal signs of inflammation as Calor, rubor, tumor and dolor. Then it was left for Virchow to lay solid foundation for cellular Pathology of inflammation. In 1877, Cohnheim by the experimental study on inflammation emphasized the role of vessels in inflammation. Later in 1892, Metchnikoff with his experiments on the transparent body of Larva of Starfish demonstrated the mechanism of phagocytosis and revealed that vascular changes alone is not the essence of inflammation. Later workers namely Thomas Lewis, Muller, Leismann, Menkin and others have added a great deal to the knowledge of inflammation and particularly the last of whom is responsible for bringing a Monograph on Newer concepts of Inflammation.

Problem of increased capillary permeability in inflammation and role of H-ion concentration in development of inflammatory reaction: Menkin defines inflammation as a complex vascular, lymphatic and local tissue reaction elicited in higher animals by presence of micro-organisms or of non-viable irritants. It represents a basic or elementary reaction to injury whereby the deleterious agents tend to be localised and ultimately destroyed. The various complexes go under the name inflammatory reaction. It is rather important to consider the mechanism of normal capillary filtration since in inflammation there is disturbance in the normal mechanism of fluid exchange. Towards the end of last century Starling expressed the opinion that normal capillary filtration was balanced by two opposing forces - on the one hand, the hydrostatic capillary pressure tends to drive the fluid forwards while osmotic pressure of plasma colloid tends to reabsorb the fluid into venous end of capillaries which is usually represented as $F = C. P. - O. P. P. = \text{Cap. filtration. } C. P. \text{ Capillary}$

pressure. O. P. P.—Osmotic pressure of plasma proteins. Later Land is in 1927 modified this view and was of the opinion that filtration occurs through a pressure gradient—first in the arteriolar end of capillaries whereas reabsorption would take place in venous end of capillaries. Drinker contradicted this and a new formula has been worked out.

F: C. P.—(O. P. P.—O. P. L). Osmotic pressure of proteins in tissue fluid and in lymph and pointed out that filtration in some spaces takes place the whole length of capillary wall. But in man however the leakage of protein through capillary wall is negligible so that pressure gradient of Starling holds good. In inflammation there is an overwhelming increase in capillary permeability so that gradient of capillary permeability is completely shattered. What causes this increased capillary permeability is a real enigma. In 1924, late Sir Thomas Lewis in England postulated that increased permeability is due to a substance closely allied to histamine which he termed H substance. Later Menkin 1937 has shown the presence of a permeability factor in the exudate, subsequently termed as Leucotaxine and was found to be diffusible. This factor was thermostable. Heating for 11 hours at 85° C failed to inactivate it. The factor could be pptd. with half saturated $(\text{NH}_4)_2\text{SO}_4$, or 20% Na_2SO_4 . Has no relation to histamine. This factor in contrast to histamine does not depress the blood pressure, when injected into a cat. In Japan, Minami and Inugalmi also found leucotaxine in inflammatory exudates. Leucotaxine has an indole nucleus and has alpha amino group and is now held responsible for increased capillary permeability and the migration of leucocytes. Recent studies indicate that leucotaxine or a similar substance can be recovered from various other body fluids such as those in ovarian cysts, Craniopharyngiomata and gliomata. It is conceivable that formation of fluid in these pathological conditions is partly due to local production of leucotaxine. In the development of inflammation there are number of interdependent sequences. For instance the presence of fibrinous network with immunological implications depends in a large part on the liberation of leucotaxine.

Borrel 1893 first pointed out the cytological sequence wherein he showed that polymorphonuclears are the first type of cells to appear, followed by Macrophages. Polymorphonuclear cells contain an enzyme leukoprotein active in alkaline medium whereas macrophages contain an enzyme active in acid medium known as lymphoprotease. These enzymes within the cell aid in digestion of ingested particles. Since these discoveries many other enzymes have been found in leucocytes. Polymorphonuclear leucocytes are incapable of survival in acid medium and hence relationship between Ph and cytology is well known.

Alkali reserve falls with progress of inflammation as shown by measuring total CO_2 content in vol.%. Cells have a double potentiality of obtaining their energy 1. by oxidation; 2. Anaerobic glycolysis. Lactic acid content rises causing a fall in ph.

The mechanism of fixation with certain irritants seems primarily to occur as a result of mechanical obstruction in the form of coagulated plasma or a clot at the site of injury in addition to obstruction to the drain of lymphatic vessels by plugs of fibrin or what is often termed thrombosed lymphatics. Leucotaxine in turn, may be responsible for the above reaction. It may at the same time enhance the permeability of the lymphatic vessels at the site of an acute inflammation. The increased capillary permeability allows the passage of albumin, globulin and fibrinogen molecules from the circulation into extra capillary areas. The presence of fibrinogen in contact with products of injured tissue doubtless favours the formation of coagulum. Lymphatics are more delicate than capillaries and they in turn get blocked with fibrin and a state of thrombosed or occluded lymphatics is then in evidence. Bacterial invasiveness can be formulated by the expression $D = Kt/I$ where D refers to dissemination; I to the intensity of injury; The greater the intensity of injury the smaller is the dissemination of a micro-organism; t refers to time. Hence the dispersion of a microorganism is directly proportionate to the time it infects a given tissue. K is a constant which refers to the character of the given organism and also to the anatomical location of inflammatory reaction.

Phagocytosis and chemical factors in inflammation: In the latter part of last century Metchnikoff devoted his sole attention to the mechanism of phagocytosis in inflammation. The influence of Metchnikoff was such that even today there are some who regard phagocytosis as the prime reaction of inflammation. He pointed out that two primary cells were concerned in phagocytosis—macrophages and microphages. In a recent study Libmann stresses that besides phagocytic cells there are also present non-phagocytic cells concerned primarily in liberating endogenous nutritive and growth substances in body fluids. These cells are termed trephocytes and their function trephocytosis. In-vertebrates mast cells seen to be comparable with the trephocytes of the in-vertebrates. The important phagocytosis promoting substance in normal or immune sera are opsonins or tropins. These substances by forming a film around the particles to be phagocytosed favour their ingestion. Mudd is of the opinion that this film alters the interfacial forces between the particle and the medium. These changes favour the spreading of the leucocyte over the surface of the object to be phagocytosed. The efficiency of mechanism of phagocytosis is regarded as a function of concentration of phagocytosis promoting substances

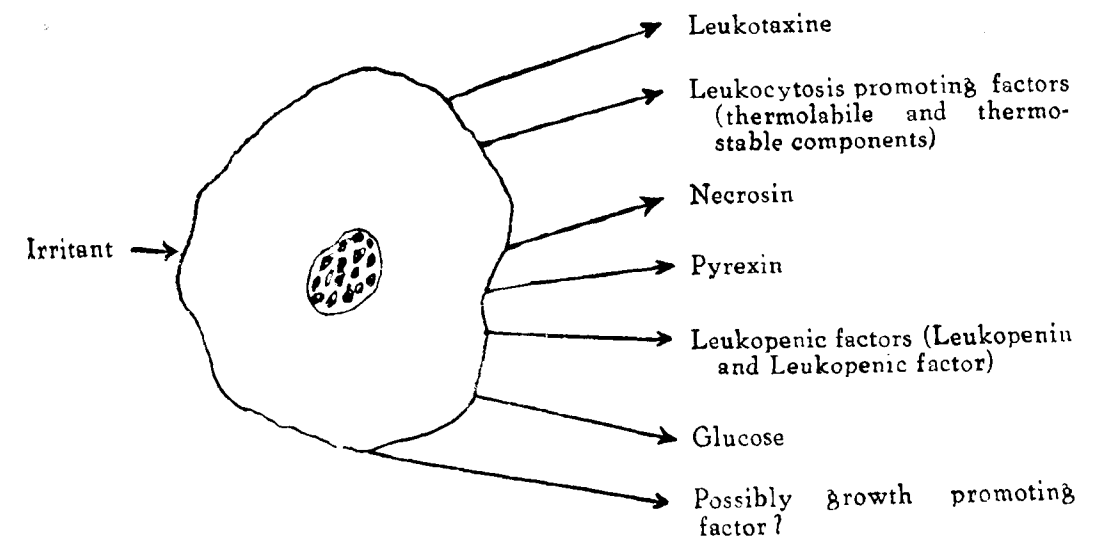
deposited on the surface of either bacteria or particles. The opsonins and tropins of sera seem to be globulins. Gordon and Katch have recently concluded that adrenal cortex exerts a regulatory influence upon the structure and functional activity of the macrophage cells. Ehrlich in a recent study of functional significance of various leucocytes in inflammation has concluded that neutrophils, pseudo eosinophils and macrophages are catabolists, splitting antigen into soluble antigenic fractions. The mast cells prevent coagulation. The lymphocytes destroy the toxic products of protein metabolism. Plasma cells synthesize antibodies. What is the mechanism which increases the white cell count in blood with inflammation? There is present in exudate a leucocytosis promoting factor (L.P.F.) liberated by injured cells into exudate and is responsible when injected to discharge number of immature leucocytes. L.P.F. is nondiffusible and thermolabile. Activity was found associated with pseudoglobulin fraction of exudates. Recent studies indicate that the active principle is located in polypeptide group in the pseudoglobulin molecule. L.P.F. is absent in normal serum and indicates that the L.P.F. acts on the bone marrow *via* the circulating blood.

Diabetes in inflammation. The cause of fever and of leucopenia in inflammatory conditions: The chemistry of inflammation implies not only the production of various factors as pointed out previously, but it involves changes in carbohydrate metabolism and in protein or nitrogenous metabolism are likewise involved. The concrete example of metabolic disorder is diabetes. A diabetic patient with inflammation tends to have diabetes accentuated. Here two mechanisms seem to enter into explanation of increased degree of diabetes with inflammation. On the one hand the glucose is formed locally at the site of inflammation from protein molecule with increased proteolysis and deamination. This action can be repressed with insulin. This is the real rationale for intensive insulin therapy in diabetes when inflammation is superimposed. On the other hand necrosin liberated at the site of inflammation tends to raise the blood sugar presumably by acting on the liver. It is these two mechanisms which may well explain the exaggerated diabetes with inflammation.

There are two additional significant properties possessed by the Englobulin fraction of the exudates. First of these being fever inducing capacity of the above fraction in exudate. Fever and inflammation very commonly go hand in hand. A substance which is insoluble in water and in the presence of electrolytes was responsible for fever inducing capacity of exudates is known as pyrexin. Pyrexin is thermostable. Preliminary studies indicate that pyrexin appears to be a polypeptide to which there may be termed glycopeptide. Pyrexin seems to be also excreted in urine with progress of acute inflammation.

Another component of Euglobulin fraction of exudates has active biological activity—depression in white cell count in blood stream following intramuscular introduction of this fraction—state of leucopenia. The factor in exudates causing leucopenia has been found to be in close association with fever factor, pyrexin. One can easily disassociate pyrexin from leucocyte promoting factor, of exudates by essentially inactivating pyrexin. Heat stable and appears to be polypeptide. Leucopenia is due to trapping of leucocytes in tissues of various organs. During marked leucopenic response the white cells are found also in sinusoids of liver and pulp of spleen. Besides the leucopenic factor recovered from exudates there is also present another leucopenic component liberated by injured cells extracted from exudative material. Thermolabile, and is usually found in alkaline exudates. It is closely associated with pseudoglobulin fraction of exudate and is termed leucopenin to distinguish from heat stable leucopenic factor. The combination of these two leucopenic factors offer a reasonable explanation for mechanism of leucopenia in inflammation.

SUBSTANCES PRODUCED BY INJURED CELL



These biochemical substances present in inflammatory exudate help to explain some of the major sequences in development of inflammation. There are doubtless other factors to be discovered. It is a combination of these various factors which explains some of the complex manifestations of inflammation, a biological reaction of significance in bodily economy in periods involving severe cellular injury.

The Pursuit of Happiness

Happiness consists in activity—it is a running stream, not a stagnant pool.

—John Mason Good.

The happiest people are those who think the most interesting thoughts. Those who decide to use leisure as a means of mental development, who love good music, good books, good pictures, good company, good conversation, are the happiest people in the world. And they are not only happy in themselves, they are the cause of happiness in others.

—William Lyon Phelps.

Happiness is a perfume you cannot pour on others without getting a few drops on yourself.

—Emerson.

If you observe a really happy man you will find him building a boat, writing a symphony, educating his son, growing double dahlias in his garden, or looking for dinosaur eggs in the Gobi desert. He will not be searching for happiness as if it were a collar button that has rolled under the radiator. He will not be striving for it as a goal in itself. He will have become aware that he is happy in the course of living life 24 crowded hours of the day.

—W. Beran Walfe, *How to Be Happy Though Human* (Farrar & Rinehart).

The best cure for worry, depression, melancholy, brooding, is to go deliberately forth and try to lift with one's sympathy the gloom of somebody else.

—Arnold Bennett.

One thing I know: the only ones among you who will be really happy are those who will have sought and found how to serve.

—Dr. Albert Schweitzer.

Curiosity is certainly one of the chief guarantees of life's enjoyment. And the older one grows the more vitally necessary it is to preserve one's curiosity. Middle age begins with its decline, and the first failure of curiosity you detect in yourself must be jumped upon ruthlessly.

—Compton Mackenzie in *London Calling*.

There is only one way to achieve happiness on this terrestrial ball,
And that is to have either a clear
conscience or none at all.

—Ogden Nash.

FRESHERS AT MAHABALIPURAM



Sermons in Stones ..

G. Sudheendran



From lifeless bones to living rocks.

A. Sankara

THIRD YEARS AND TADA HILLS



N. Govindarajan

...far from the madding crowd

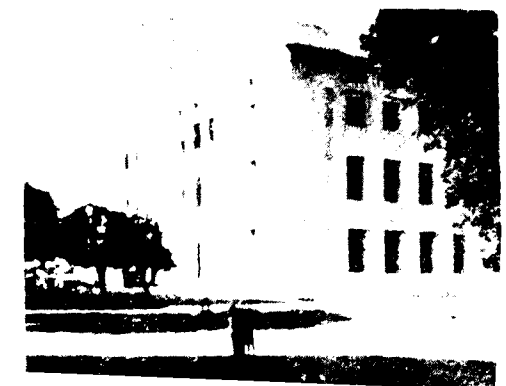


N. Govindarajan

In the cool sequestered vale.



The New Hygiene block



DR. D'SILVA

68, GREEN PATH,
COLOMBO.

12th September, '52.

THE ALL-INDIA PEDIATRIC CONFERENCE, MADRAS.



His Excellency Sri Prakasa, the Governor
inaugurated the Conference.

Dr. Damodar Rao



They also serve...

Dr. Damodar Rao

Dear Professor Achar,

I should have written long ago to thank you for all your kindness and hospitality to all of us. I do appreciate especially the Volunteers. They were grand lads so willing to see us comfortable and happy. Please give all of them our very grateful thanks. On looking back after a fortnight, I still think 'Madras' was the best Conference we have had so far. At least 40% of the papers were upto international standards.

Yours sincerely,

Dr. D'Silva.

Extract from letter of Dr. D'Silva, Professor of Pediatrics
University of Ceylon, Colombo written to Dr. Achar on 12-9-'52.

Courtesy: Dr. S. T. ACHAR, M.D., F.R.C.P.

Abnormalities of Calcium Metabolism

V. KRISHNAMOORTHY REDDY.

TO get a comprehensive picture of the abnormalities of calcium metabolism, a clear idea of the physiology of calcium metabolism is necessary. But as a detailed account of the same is beyond the scope of this article, a brief outline only is given below.

Calcium is an important constituent of all body fluids and tissues. It is essential for the proper ossification of bones, for dentition, neuromuscular excitability of the muscles, cardiac systole and coagulation of blood. The daily requirements of calcium for an adult is about 0.5 gm. Children, pregnant and lactating women need more. Apart from the skeleton which contains 99% of the total amount, the major part of remainder is in blood, specially in plasma (9-11 mg. %). Of this amount 5-6 mg. % is in an ionised state which is important for the normal neuromuscular excitability.

The blood calcium level depends on various factors: (1) Presence of an adequate amount of calcium in food. (2) Adequate supply of Vitamin D, which increases absorption of calcium from gut and favours deposition of it in bones. In the absence of Vitamin D, even if Calcium is present in sufficient quantities in food, there is hypocalcemia. (3) The acidity of gastric contents, which renders the calcium salts readily soluble, improves absorption. (4) Parathyroid activity—the Parathyroids, the great regulators of calcium metabolism, if overactive leads to hypercalcemia, increased excretion of calcium in urine, and rarefaction of bones. Its underactivity leads to hypocalcemia and tetany which may be relieved by the administration of calcium or parathormone; (The pathological conditions are described later). (5) Phosphate level of blood—There is an inverse ratio between calcium and phosphates. The level of one falls if the other rises. Hence excess of phosphates in diet inhibits absorption of calcium.

CLASSIFICATION OF DISORDERS OF CALCIUM METABOLISM.

(a) Hypocalcemic conditions :

1. Parathyroid dysfunction ;
2. Renal insufficiency and Uraemia ;
3. Alkalosis ;
4. Rickets and osteomalacia.

(b) Hypercalcemic States :

1. Parathyroid over activity, Parathyroid tumors. Excessive administration of parathormone in hypocalcemia, Chronic ulcerative colitis, Lead poisoning etc.
2. Multiple myeloma ;
3. Carcinomatosis of bones ;
4. Paget's disease.

(c) Pathological calcification.

A. Hypocalcemia: The main effect of hypocalcemia (Lowering of blood Calcium level below 6 mg.%, specially the ionised part of it) is tetany—a condition of spasmodic contraction of muscles. Depending on the degree of hypocalcemia the tetany may be frank or latent, acute or chronic. Jerking movements or generalised convulsions are more common in children than in adults. Spasm of muscles of hand, feet and legs are common. If hypocalcemia is more, severe spasmodic retention of urine and spasm of the respiratory muscles (some times ending fatally) may occur. In latent tetany the calcium level is not reduced to the critical level at which the symptoms of tetany appear. However, there is always the danger of the patient going into tetany at any time.

The common cause of hypocalcemia in man is the parathyroid deficiency which in turn may be due to operative removal of the gland as in the case of tumors of the parathyroid gland, or unintentional removal of parathyroids in the surgical treatment of goitre. Hence there is an absence of the normal function of Parathormone in maintaining the blood calcium level, by mobilising it from the bones, and controlling the phosphate metabolism.

In renal insufficiency there is failure of phosphate excretion. The blood phosphate level mounts up from the normal level of 3.5 mg %. As a result of this the calcium level falls, resulting in hypocalcemia.

Even in alkalosis symptoms of tetany are noticed, but it cannot be easily explained on the basis of calcium deficiency in the blood. Here the total amount of calcium in blood is not significantly changed, but the ionised part of calcium is reduced due to the shift of acid-base balance of the blood towards the alkaline side. Alkalosis is met with in some peptic ulcer patients who are treated with alkalies like sodium bicarbonate and other antacids. Alkalosis also results if there is excessive and persistent vomiting as there is loss of chlorides. Alkalosis may also be due to hyperventilation as in anoxias as there is reduction of alveolar CO_2 , and there is disturbance of acid-base balance of the blood.

Rickets: It is a deficiency disease occurring in children between the ages of $\frac{1}{2}$ to 2 years. The disease is characterised by defective bone growth and bony deformities, anaemia and lymphoid hyperplasia, splenomegaly, hypotonia of muscles and defective dentition.

Aetiology: The deficiency of 4 factors results in rickets—Inadequate supply of (1) Calcium (2) Phosphorus (3) Vitamin D and (4) sunlight. It is predominantly a disease of infants specially those living in slums. Their diet is poor in quality as well as quantity. It consists almost exclusively of carbohydrates and proteins and this also is a predisposing cause. Addition of Vitamin D in the form of cod-liver oil cures the defect in many cases. Lack of sunlight is also a potent factor in the development of infantile rickets. The ultra violet rays activate the sterols of skin to form Vitamin D. During winter months, infants living in illventilated and crowded houses of slums neither receive Vitamin D in their diet nor utilise the sun's rays. But in our country, lack of sun rays does not play such an important role in precipitation of rickets, as the lack of other things. Deficiency of Phosphorus is more serious than deficiency of calcium.

PATHOLOGICAL LESIONS.

- (1) **Blood:** Lowered calcium and phosphate level; Increased serum alkaline Phosphatase.
- (2) **Bones:** There is osteoporosis of even formed bones; There is widening of the epiphyseal cartilage, not only in the longitudinal direction, but also laterally. The bones are soft. The epiphyseal cartilage is very vascular. There is bone thickening at the costochondral junctions, ends of humerus and radius.

Microscopic appearance: There is an increase of the epiphyseal cartilage cells. New osteoid tissue is laid down, but this fails to get ossified.

The results of the bony changes are :

1. Cranium—Cranio-tabes and frontal bossing.
2. Vertebral column—Kyphosis or scoliosis.
3. Femur—Lateral bending.
4. Tibia—anterior bending.
5. Pelvis—The promontory of the sacrum is pushed forward and acetabula inward resulting in narrowing of the pelvis. There is narrowing of the pelvic inlet. The sequel of this deformity is difficulty in later life during delivery.
6. Sternum and ribs—The sternum is pushed forward resulting in "pigeon chest", "Harrison's, Sulcus," and "rickety rosary" are also the results of Rickets. These defects predispose to respiratory diseases.

Osteomalacia: Pathology of Osteomalacia is the same as rickets, but this condition occurs in adults i.e., after the period of growth. It mainly affects women. Puberty, pregnancy and lactation predispose to this condition. The entire bone is soft. There is generalised osteoporosis. The ossified bone is replaced by osteoid tissue. Compression of the vertebra results in shortening of the patient. There is bowing of legs and distortion of pelvis. There is a compensatory hyperplasia of the parathyroids. Blood calcium and phosphorus levels are below normal. Tetany may occur both in Osteomalacia and rickets.

B. Hypercalcemia: Hypercalcemia is generally associated with hyperplasia or a tumor (usually an adenoma) of the parathyroid glands. The resulting clinical picture is Generalized Osteitis Fibrosa cystical or *Von Recklinghausen's disease*. In this condition, there is decalcification of bones, formation of cyst like cavities and resorption of the bony tissues of trabaculae and shaft which are largely replaced by fibrous tissue. The signs and symptoms are: (1) Bony swellings and pain in the bones; (2) Elevation of serum calcium (about 15 mg. %); (3) Fall in Plasma inorganic phosphorus and increase in plasma phosphatase; (4) Polyuria, increased calcium excretion and renal damage and deposition of calcium in renal tubules; (5) Spontaneous fractures of bones and deformities of of limbs or bones spine are common.

The sequence of events may be summarised thus: Increase of parathormone—increased phosphate excretion resulting in lowering in blood phosphate level—Removal of Phosphorus and calcium from bones

resulting in increased blood calcium level. The continuous withdrawal of calcium leads to osteoporosis, bending of bones and spontaneous fracture. The rarefied bones are replaced by young fibrous tissue which is poorly Vascularised and degeneration, softening and cyst formation are common.

Paget's disease: It is a rare familial disease of the skeleton, where there is involvement of the skull, pelvis, bones of limbs and spine. The condition is usually seen after the age of 40 years. The cranium is enlarged and thickened. The long bones are massive and curved. There may be kyphosis. Calcium content of bones is decreased. Usually the blood calcium level is increased. In many of these cases there is an associated arteriosclerosis.

There are many other rare conditions, where there are disturbances of calcium metabolism. But they are primarily defects of bones (e.g., multiple myeloma, Carcinomatosis of bones) or general metabolism rather than defects of calcium metabolism. Hence, a discussion of all these conditions will be too much to come under this heading, and at the same time too little to be of much use.

C. Pathological calcification: Deposition of Calcium in tissues which normally do not contain calcium is known as pathological calcification which may occur either in the normal tissue or in necrotic and degenerating tissue. Deposition of Calcium in normal tissue is seen in hypercalcemic states like Osteitis fibrosa, Paget's disease, multiple myeloma etc. The circulating calcium gets deposited in tissues like kidney, tubules and alimentary mucosa. This type of calcification is called metastatic calcification. In experimental animals like rats administration of enormous amounts of Vitamin D causes acute and massive calcification of heart, aorta and coronaries within two days causing death of the animal. But in human beings metastatic calcification due to excess of Vitamin D has not been met with.

Mechanism of calcification in necrotic tissue: There is an initial fatty degeneration. The fat is hydrolyzed with the liberation of fatty acid. The calcium unites with the fatty acids to form a calcium soap. The fatty acid is then replaced by carbonic acid and phosphoric acid in the blood and the final result is calcium carbonate and calcium phosphate. This is the basis of Klotz theory. But according to Wells, it is a physical process, the calcium and phosphate being adsorbed by the degenerated tissue. However, the mechanism of calcium deposition in degenerative

tissue is not clear in all cases. It is interesting to note that actual bone formation with bone-marrow has been observed in some cases, in the Medial sclerosis of Monkeberg. Examples of pathological calcification are many, to cite a few - (1) Caseous pulmonary tuberculous lesions and tuberculous glands (2) Atheromatous plaques (3) Cardiac valves in old age and in inflammatory conditions (4) Phleboliths (5) degenerative tumors like fibroids (6) Cartilages in old age (7) dead ganglion cells in central nervous system (8) Animal parasites etc.

DOCTOR'S DILEMMA—

A third year medical student was delivering unaided his first baby in one of the poorer sections of South Boston. As is the case in "home deliveries", most of the family were present.

As soon as the infant was born, the nervous student held it up for the customary spank. To his horror, the baby slipped through his fingers, falling harmlessly on to a pile of blankets on the floor. The grandmother, who throughout the entire procedure had been sitting calmly by the kitchen stove, began to hurl a stream of abuse at the frightened young medico. Quickly recovering his wits, he said professionally, "he'll be all right, madam. Sometimes we have to drop 'em three times before they start breathing".

—Dr. L. E. Hackworth.

Lieutenant General Vandegrift of the U.S. Marine tells this one:

A patient came to one of our field hospitals with the complaint that he was unable to sleep at night, and the doctor advised him to eat something before going to bed.

"But, doctor", the patient reminded him, "two months ago you told me never to eat anything before going to bed".

The good doctor blinked and then with professional dignity replied: "My boy, that was two months ago. Science has made enormous strides since then".

The past is always with us, never to be escaped. It alone is enduring but amidst the changes and chances which succeed one another so rapidly in this life we are apt to live too much for the present and too much in the future.

—Osler.



MULTI VITAMIN TONIC
A reliable & a delicious tonic eminently suitable for all ages.

FORMULA:

Each fluid ounce represents:			
Vitamin A	32,000 i.u.	Niacinamide	80 mg.
Vitamin D	10,000 i.u.	Vitamin C	32 mg.
Vitamin B ₁	24 mg.	Medicinal glucose	q.s.
Riboflavin	4 mg.	Fresh Orange Juice	1 oz.

FAIRBANK KIRBY LTD.
GRIMSBY - ENGLAND.

TWO OUTSTANDING UTERINE TONICS ARE NOW AVAILABLE WITH US WITH IMPROVED FORMULA.

ALETIS CORDIAL
(FOURNIER)
Utero-Ovarian Sedative & Anodyne

FORMULA:

Each fluid ounce represents:

Aletis Farinosa	30 grains.
Viburnum Opulus	15 grains.
Mitchella Repens	30 grains.
Helonias	30 grains.
Caulophyllum	15 grains.
Thiamine Chloride (Vitamin B ₁)	25 mgm.
Glycerine Syrup etc.	q.s.
Alcohol	15%



LIQUOR SEDANS
(FOURNIER)
Utero-Ovarian Tonic Sedative & Anodyne

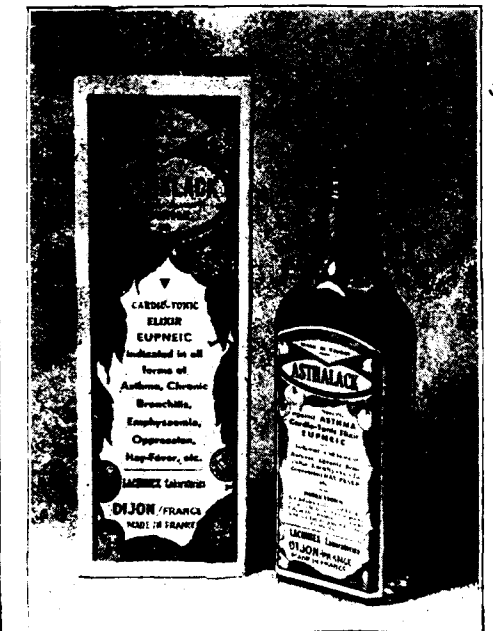
FORMULA:

Each fluid ounce represents:

Viburnum Prunifolium (Black Haw)	60 grs.
Fluid Extract of Hydrastis	30 min.
Piscidia Piscipula (Jamaica Dogwood)	30 grs.
Vitamin B ₁ (Thiamine Hydrochloride)	25 mgs.
Alcohol	15%
Glycerine, syrup etc.	q.s.

Manufactured by: **LABORATORIES FOURNIER & CIE., Dijon, France.**
Sole Distributors: **J. J. MEHTA & SONS, 40, Broadway, Madras.**

ASTHALACK
is an outstanding remedy against Bronchial Asthma.



Asthalack contains:—Cocillana, Euphorbia, Aminophylline, Caffeine Tri-iodide, Grindelia, Lobelia, Senega, Ephedrine, Belladonna etc.

DOSE

ADULTS: 1 Teaspoonful 3 or 4 times a day only.

NEURONA-B-COMPLEX

Fortified

ELIXIR

Extremely palatable and eminently suitable for all ages. Elixir **Neurona-B-Complex** supplies the chief constituents of Vitamin B Complex in a concentrated form, reinforced with essential minerals (Glycerophosphate of Calcium, Sodium, potassium, Manganese, Strychnine) and Lecithin the important vital factor for the Nerves.

Neurona-B-Complex elixir stimulates appetite, improves digestive function, restores vitality and is an extremely effective tonic and nutritional supplement. Valuable during convalescence of all types, pregnancy, lactation, old age, and nervous breakdown.



RETORT PHARMACEUTICAL CO., INC.

Manufacturing Chemists

LONG ISLAND CITY, NEW YORK, U.S.A.

NEURONA-B-COMPLEX

ELIXIR

Each fluid ounce Represents:

Thiamine Chloride	31 mg.
Riboflavin	10 "
Nicotinic Acid Amide	56 "
Pyridoxin Hydrochloride	2 "
Calcium Lactate	12 Gr.
Cal. Glycerophosphate	8 "
Sod. Glycerophosphate	12 "
Manganese	2 "
Strychnine	1/200 "
Lecithin	34 mg.
Lactic Acid, Glycerine,	
Syrup aurantii	q.s.
Alcohol	17%

DOSE

Adults : 1 to 2 teaspoonsful 3 times a day before food.

Children : $\frac{1}{2}$ to 1 teaspoonful 3 times a day before food.

SUPPLIED IN BOTTLES OF 4 & 8 oz.

CAPSULES

Each Capsule contains:

Vitamin B ₁	5 microg.
Calc. Phosphate	5 Gr.
Vitamin B ₁	10 mg.
Riboflavin	2 "
Pyridoxine	1 "
Calc. Pantothenate	2 "
Nicotinamide	20 "
Vitamin C	25 "
Lecithin	10 "

SUPPLIED IN BOTTLES 30

Chemotherapy of Malignant Diseases

M. N. GURUSWAMI,

B.A., M.B. M.Sc. (Mich.)

CHEMOTHERAPY of malignant diseases can be broadly defined as "the use of any chemical substance administered systemically, which, while relatively non-toxic to the host, will interfere with, favourably modify or destroy a neoplastic growth or alleviate its deleterious effects on the host".

A considerable amount of research has been directed towards the discovery of chemical substances of therapeutic value in malignant diseases. Recent advances in chemotherapy—oestrogens in prostatic carcinoma, nitrogen mustard in lymphoma, urethane and folic acid antagonists in leukaemia, etc., have produced encouraging results.

Varied are the agents used for the treatment of cancer, such as tumour extracts or autolysates, organ extracts, enzymes, metals, agents interfering with aerobic glycolysis, fever, cold, dyes, snake venoms, vitamins, various chemicals and a number of miscellaneous substances. Thousands of these remedies have been tried and only a few have become established as useful in the alleviation of symptoms and prolonging expectation of life, if not, actually curing the disease.

These agents combat malignancy in different ways, viz., interfering with vital processes of the abnormal cells, such as nuclear division, enzymatic reactions, etc, having greater affinity for the neoplastic tissue than the normal ones, or modifying the influence of the environment on the abnormal cells.

CLASSIFICATION.

- I. Biological products: Coley's fluid. Shear's polysaccharide. K. R. vaccine. Anti-reticular cyto-toxic serum (A. C. S.) Antihyaluronidase. Organ extracts-spleen, liver, muscle, etc.

FOLI-B-COMPLEX

WITH

VITAMIN B₁₂ & VITAMIN C

ELIXIR

FORMULA:

Each fluid ounce contains:

Liver Concentrate	1:8
Ferrous Sulphate exsic	12 grs
Folic Acid	16 mg.
Crystalline Vitamin B ₁₂	25 mcg.
Thiamine Hydrochloride (Vitamin B ₁)	25 mg.
Riboflavin (Vitamin B ₂)	4 mg.
Niacinamide	50 mg.
Pyridoxine Hydrochloride (Vitamin B ₆)	2 mg.
Choline Chloride	35 mg.
Vitamin C (Ascorbic acid)	50 mg.
Sodium Glycerophosphate	8 gr.
Manganese Glycerophosphate	5 gr.
Glycerine, Syrup, Aromatics etc.	qs.

Dose: 1 to 2 teaspoonsful 3 times a day.

Indications:—Successfully used in all types of Anaemias, Hyperchromic macrocytic anaemias, Macrocytic anaemia of Sprue and Pellagra; Megaloblastic anaemia of Pregnancy and Infancy hypochromic microcytic anaemias; Iron deficiency anaemias, Anaemias of Pregnancy and Lactation, Nutritional anaemia, Anaemias of Infancy and childhood, Anaemias associated with chronic haemorrhage, etc., etc. Highly useful in general debility, Neurasthenia, Beri beri, Anorexia, Neuritis, Poli-neuritis, Cardiovascular disturbances, Convalescence, etc., etc.

MOST

POWERFUL

HAEMATINIC

AND

VITAMIN

B

COMPLEX

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CAPSULES

FORMULA:

Each Capsule contains:

Liver Dessicated	200 mg.
Ferrous Sulphate Dried	129.6 mg.
Folic Acid	2 mg.
Crystalline Vitamin B ₁₂	2 mcg.
Thiamine Hydrochloride (Vitamin B ₁)	5 mg.
Riboflavin (Vitamin B ₂)	5 mg.
Niacinamide	20 mg.
Vitamin B ₆ (Pyridoxine Hydrochloride)	1 mg.
Cal. Pantothenate	3 mg.
Choline Chloride	20 mg.
Inositol	10 mg.
Vitamin C (Ascorbic Acid)	25 mg.

Dose: 1 to 3 Capsules daily.

RETORT PHARMACEUTICAL CO., INC.

LONG ISLAND CITY, NEW YORK, U. S. A.

- II. Antimetabolites: Aminopterin. Pteropterin.
- III. Hormones: Oestrogens. Androgens. A.C.T.H. and Cortisone.
- IV. Cell poisons. Nitrogen mustards. T.E.M. Urethane. Colchicine. Podophyllin. Fowler's solution.
- V. Radio-active substances: X-ray and radium. Phosphorus. Iodine. Sodium, etc.
- VI. Miscellaneous compounds: Dyes-Oxazine dyes. Heptaldehyde. Stilbamidine, pentamidine. Enzyme poisons.

BIOLOGICAL PRODUCTS.

The first chemotherapeutic agent used against cancer was the topical application of escharotics. Ancient Egyptians used arsenic for this purpose and in the 19th Century a mixture of arsenic trioxide and zinc chloride was used.

In 1892, Dr. Colony observed that a patient with inoperable sarcoma of the neck recovered after an attack of erysipelas. This resulted in the use of the toxin from sterile cultures of *Str. erysipelas* together with that of *B. prodigiosus*. A recent evaluation by Nauts has shown 106—five-year survivals in 312 inoperable cases.

A polysaccharide obtained from *B. prodigiosus* by Shear has been found to produce haemorrhage, necrosis and partial regression in experimental tumours. However, this is found to be unsuitable for clinical use.

Roskin found that *Trypanosoma cruzii* got concentrated in the neoplasms of animals and destroyed the malignant cells. The endotoxin or K-R vaccine, prepared by killing the trypanosomes by heat, showed similar effects on the malignant cells in man.

The invasiveness of the neoplastic cells to the adjacent normal tissue was thought to be due to a spreading factor, such as hyaluronidase. Two anti-hyaluronidases, Antivasins I and II, have been found in plasma and have been studied for their neoplasm-regression property.

The role of the reticulo-endothelial system, in man and animals, in the defense against malignant growths has been a problem of research. Russians used anti-reticulo-cyto-toxic serum in cancer patients (Hodgkin's disease) with favourable results, especially, as preventive agent against recurrences.

Organ extracts from normal liver, spleen, muscle and tumour extracts have been tried with varied results. Basal-cell epitheliomas are reported to have been successfully treated.

ANTIMETABOLITES.

Many folic-acid-antagonists have been used successfully in the chemotherapy of neoplastic diseases. Folic acid itself is found to produce inhibiting effect on certain tumour growths.

Aminopterin is a folic acid antagonist, acting by competitive inhibition of folic acid in regard to cellular metabolic processes. It is useful in the treatment of acute leukaemia, particularly in children and young adults. A considerable percentage of cases undergo complete but temporary clinical remission. Toxic reactions from continued use may be noted (G.I. ulceration, alopecia.) Serious toxic manifestations are bone marrow aplasia with associated leukopenia, granulocytopenia, anaemia, and thrombocytopenia. The dosage is 0.5-1.0 mg. per day in children; 1-2 mg. per day in adults.

Amino-an-fol is another folic acid antagonist used in acute leukaemia. Dosage—children-30 mg./day; adults-75 mg./day.

Amethopterin—same uses as for aminopterin. Dosage: children—5mg./day; adults—10mg./day.

Pteropterin (pteroyl-triglutamic acid) and Diopterin (pteroyl-diglutamic acid) are two derivatives of folic acid acting antagonistically to folic acid. They are used as palliative agents in the management of a variety of neoplastic diseases. They are said to increase the sense of well-being, to improve the nutritional state and to relieve pain. Dose: pteropterin—10-20 mg./day.

A purine analogue, guanozolo has been found to be effective in controlling experimental tumours in mice.

Some riboflavin antagonists have been tried in experimental tumours.

HORMONES.

The principle of inhibiting cell-proliferating action of sex hormones by the administration of opposing sex hormones (both natural and synthetic) has been utilised in the treatment of human cancer. Regression of tumours of sex and mammary glands and uterine malignancies has been obtained in many cases.

Oestrogenic therapy and orchidectomy in malignancy of prostate glands have produced beneficial results, with regression of the tumours, relief from pain, decrease in the metastatic growth and improvement in general condition. The growth of malignant prostatic tissue is stimulated by androgens. Oestrogens reduce this androgenic stimulation by (1) an inhibition of the pituitary, followed by cessation of the testicular androgenic secretion, which is under the control of pituitary, (this may be termed "temporary medical castration" for all practical purposes) and (2) an inhibition of the action of testosterone on the prostate.

Both natural and synthetic oestrogens produce similar effects, but the latter show higher incidence of toxic side-effects. Stilbesterol is the main oestrogen used in the cancer of prostate. Rather high doses are used e.g. 3 mg. or more of stilbesterol per day are given orally. Prolonged oestrogen administration may produce unpleasant side-effects of minor importance e.g. painful enlargement of breast, atrophic changes of testes, etc.

Oestrogens are beneficial in bladder malignancies of male (Papillomas), though of doubtful use in the female, and have been used in the treatment of advanced mammary cancer. Results are favourable in old patients whereas in younger ones oestrogens actually stimulate the cancer growth.

In certain mammary cancers testosterone has been used successfully. Intramuscular injections of 100 mg. of testosterone propionate three times a week for ten weeks, followed by a maintenance dose of 40-60 mg. daily of methyl testosterone for eight weeks, is the dosage schedule followed. No serious toxic effects have been noted.

Masculinising effects of the androgens have been noted as side-effects (e.g. excess hair growth on face and body, deepening of voice, acneform eruptions etc.) Relief of pain, increased appetite and improved general condition are obtained.

A. C. T. H. and Cortisone: Favourable results have been reported in cases of multiple myeloma and leukaemia treated with A. C. T. H. and Cortisone. The possibility of inducing remission in lymphatic leukaemia with A. C. T. H. and in a few cases with cortisone is of interest mainly because of the refractoriness of these cases to aminopterin.

Like X-ray therapy and other chemotherapeutic agents, A. C. T. H. probably, will not afford a permanent cure but may effect transitory remissions. It is possible that A. C. T. H. is able to reduce markedly the tissue reactions to the cancerous material and thus to affect the symptoms of the disease, although it may exert little or no beneficial effect on the carcinoma itself. Dosage—ACTH—25-50 mg. every six hours; Cortisone—100-600 mg. daily.

Cell Poisons: These are chemicals that arrest cell division.

Nitrogen mustards: $R-N=(CH_2CH_2Cl)_2$. These have been recently introduced (1946) in the treatment of neoplastic diseases. Two of the numerous derivatives have been found useful. They are Tris-chloroethyl amine hydrochloride and Methyl-bis-chloroethyl amin

hydrochloride. The latter has been given extensive clinical trial, with the recommended dosage of 0.1 mg./kg. given intravenously on four successive days. They inactivate enzymes and affect nuclear division of growing cells. They induce remissions lasting considerable periods, in Hodgkin's disease, lymphosarcoma and chronic leukaemia. Blood picture improves, spleen, liver and tumour masses recede, and general condition improves. They are of particular use in the radio-resistant stages of these cases. They may restore the normal sensitivity to X-ray.

They are also useful in polycythaemia rubra, vera, certain brain tumours and mycosis fungoides.

They are highly toxic and frequently cause venous thrombosis, tissue necrosis after extravasation, nausea, vomiting, anorexia, etc., Overdosage causes serious depression of the haemopoetic and lymphatic tissues.

The drugs are not curative and successive courses become less and less effective.

T. E. M.: Recently an analogue has been prepared, called Triethylene melamine (Triethylenimino-s-triazine) it is useful in Hodgkin's disease, lymphosarcoma, chronic lymphatic leukaemia, myeloid leukaemia, etc. Its action is similar to that of nitrogen mustard. But it differs from it, however, in not producing central nervous system stimulation in animals at LD₅₀. It is given orally as against the intravenous administration of the nitrogen mustards. It is toxic to the bone marrow. An initial dose of 15 mg. over a period of 3 days may be given safely. Its advantages are that it can be given orally and requires no hospitalisation.

Urethane: $(C_2H_5O CONH_2)$ has been used in leukaemia (myeloid and lymphatic) with favourable results. Its effects are similar to those of X-rays. The effects are palliative but no permanent eradication has been obtained. It is less effective in chronic lymphatic leukaemia, of some benefit in multiple myeloma and prostatic carcinoma and of no value in Hodgkin's disease or lympho-sarcoma.

Oral administration produces nausea, vomiting and occasional diarrhoea. Rectal or parenteral administration will avoid largely these side-effects. Drowsiness will occur. Severe depression of haemopoetic function may occur after prolonged use. Liver damage has been reported. The anti-neoplastic dose is usually 2-4 Gm. daily.

Colchicine: It is an alkaloid obtained from the autumn crocus and is a mitotic poison arresting cell division in the metaphase. In animal

experiments, it arrests tumour growths temporarily and in repeated doses, is found to be toxic. When administered to humans with cancer in 2 mg. doses intramuscularly, nuclear division was arrested in the metaphase stage from between 16-24 hours. It is toxic to the normal cells as well. Although cancer cells are susceptible to colchicine, the concomitant toxic effects make its use hazardous. A combination of the effect of colchicine and other physical or chemical agents has been advised.

Podophyllin: Its local use in condylomatous warts is recent. Podophyllotoxin and peltatins have been found to have tumour necrotising effect. Basal cell carcinomas of skin have been successfully treated by local podophyllin application. Ointment form is preferred to the solution (20-25%).

Fowler's solution: (Potassium arsenite) is a well established agent useful for inducing clinical remission in early and responsive cases of chronic myelogenous and lymphatic leukaemia.

RADIATION AND RADIO-ACTIVE SUBSTANCES.

Cancer can be both caused by and treated with physical radiation and substances emitting radiant energy. X-rays have long been in use in the treatment of carcinomata and sarcomata and improvements and remissions have been obtained. With the availability of radio-active isotopes, the formerly expensive radium therapy has become widely applicable. However, X-rays and radio-active isotopes cannot be regarded as chemotherapeutic agents. Since localisation of radio-active substances in certain regions is of great importance, discovery of substances which will ordinarily accumulate in those particular regions is the main problem. After finding such a substance, the incorporation of a radio-active element into that compound is the next step. So far only radio-active elements have been used as therapeutic agents in cancer. Radio-active phosphorus and iodine are in common use. Other elements tried are Na, Mn, As, Co, Zn, etc.

Phosphorus: P^{32} (half-life of 14.3 days) has been widely used in the treatment of leukaemia and polycythaemia vera with success. Phosphorus shows selective concentration in actively growing tissues and in bone marrow. Its effects are due to ray emanations. It may be given orally or intravenously. Orally it is given in orange juice in the morning. Intravenously it is given as a sterile isotonic solution of sodium monohydrogen phosphate which contains P^{32} . Dosage varies from 1-10 millicuries. Such doses as are used in leukaemia, do not affect R. B. C. or produce radiation sickness. The treatment is palliative rather than curative. Leukopenia, thrombocytopenia and anaemia may occur.

Iodine: Radioactive iodine, as sodium iodide with isotope iodine, is used chiefly in the study of thyroid function and the treatment of thyroid malignancies, because of the specific affinity of thyroid for iodine.

I^{130} (half-life of 12.6 hours) and I^{131} (half-life of 8 days) have been used, and rays are emitted by both the isotopes. Radio-iodine treatment is limited to thyroid malignancy.

Radio sodium has been used in the treatment of some blood dyscrasias.

Insoluble radio-salts are implanted as seeds in or near malignant lesions and exert anti-mitotic effect during their life time.

The following are the requirements of good radio-isotopes:—must be non-toxic to the normal tissues; must not localise strongly in tissues other than the tumour mass; half-life must be short enough so that radiation will not persist beyond the desired period.

MISCELLANEOUS AGENTS.

Dyes: Several dyes exhibit cell-growth-inhibiting effect and retard the growth of neoplastic tumours. The chief ones tried are the oxazine dyes - Nile blue A and Nile blue B.

Heptaldehyde: Complex with sodium bisulphite caused regression and liquifaction of mammary carcinoma in mice, though the regression was only temporary. It has not been found valuable in human clinical trials.

Stilbamidine and its derivative, pentamidine, have been used as palliative drugs in multiple myeloma. The relief of pain obtained with these has been striking. Stilbamidine, 150 mg./day, showed arrest of the disease only. A total dosage of 5-6 Gm. of stilbamidine intravenously over a long period has been recommended. It is thought that stilbamidine reacts with the nucleic acid to form a relatively inactive compound. Toxic effects like facial neuropathy, due to toxic degeneration of the main sensory nucleus of the trigeminal nerve, have been reported.

Enzyme poisons: They are mainly of academic interest. Sodium fluoride, iodoacetic acid, sodium ozide, etc., have been used in the treatment of leukaemias, lymphosarcoma and several types of carcinoma with some result.

CONCLUSION.

In conclusion, it will be noticed that only a small group of human neoplastic diseases is susceptible to the effect of the chemotherapeutic agents. These are only palliative and not curative. It is to be hoped that the future may produce chemotherapeutic agents, specifically affecting the malignant tissue, with the least side-effects on the normal tissues, being capable of easy administration and control, being economically cheap and available to all classes of people afflicted with the devastating disease, and finally, producing longer remissions, if not, radical cure.

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Alcoholism—A Social and Psychological Problem

MEDICO.

THE use of alcohol for human consumption, addiction in particular, has always been considered as a moral problem. Moralists, through the rigorous laws of prohibition the drink habit has not been eradicated. It is essential and rational for us to view alcoholism not as a "Sin" but as a disease like any other disease of body and mind and treat it accordingly. A complete eradication of this habit cannot be achieved until public and private clinics are opened for the treatment and rehabilitation of the alcohol addicts.

Who is an addict? He is one in whom we find a chronic and progressive condition characterised by ever growing dependency on alcohol with loss of self control as to the quantity and occasion. There may be prohibition. But still Pondichery is not far off!

Countless number of people make pilgrimage to Pondichery just to get themselves drunk. There are individuals among these with some pre-existing physical, psychological, social problems who turned to alcohol just for a temporary relief or escape. Some others are normal individuals who begin by drinking on social occasions but are almost imperceptibly over powered by the pampering effects of alcohol. Yet another group of people, apparently normal, who seek alcohol in an obsessive way for relief of pain and anguish resulting from life's catastrophies. Among these devotees of Bacchus there are psychotics, epileptics, sexual deviates, feeble minded persons and the like.

In whatever way people get used to it, once addition occurs it leads to symptoms of its own and with oft-repeated orgies of drinks, mental and moral deterioration is on the march. When this involves a large number of mankind, certainly an effective remedy has to be sought to put an end

to the habit. There are two modes of approach. One belongs to strictly academical medicine—physiological and pharmacological approach. The second is the approach of social medicine and psychiatry. The pharmacological and metabolic actions of alcohol on the tissues of the body are still not known completely. However, the replacement of symptomatic therapies in vogue by some specific drugs is suggested. Recent studies with adrenocorticotrophic and adrenocortical hormones seem to hold some promise in this line of treatment.

The ideal method of beginning the fight against this habit is not by prevention of the people from drinking, but by enquiring into the underlying causes and then making the people feel a sort of aversion to it by the conditioned reflex method or by making people sensitive to alcohol.

Apart from the study of the immediate exciting causes for seeking alcohol a careful evaluation of the psycho-social background of the patients is necessary. Subsequent to this, medical therapy, psycho therapy and social therapy can be considered. The medical therapy consists in the judicious use of appropriate medication and treatment to restore physical well being. Psychotherapy consists in establishing a physician-patient relationship in which the patient can talk his problem away—a relationship in which the patient can gain reassurance, learn to control impulses, resolve conflicts and develop more mature interpersonal relationship. Social therapy involves the application of social principles and techniques to aid the patient in finding solutions to his problems affecting his family, finance, occupation, etc., and by proper canalisation of interests to prevent the search for an escape. Cultivation of the patients' vocational interest and the inculcation of a feeling of responsibility as a member of the society can also be invoked.

At the present moment, when drinking has become a common and widespread illness among large number of people inspite of prohibition, it has become a problem of social medicine. Especially when these individuals have reached a stage at which they cannot deal with themselves unaided, it becomes a moral duty of the medical profession to help these men in "ministering unto themselves".

The World Health Organisation too has recognised this by creating a sub-committee on alcohol as part of the expert Committee on mental health. There is therefore a distinct responsibility on the medical profession to formulate a comprehensive programme in solving the problem of ever-existing evils of drinking. The duty of the doctor should not cease with the treatment of alcoholic coma and issue of certificates of

drunkenness, leaving the care of alcoholics to the state and politicians. What is needed is not a complacent, strictly academical medicine but a living social medicine. In an approach to this problem from the viewpoint of social medicine, two methods are suggested. One is primary prevention and the other secondary prevention. Primary prevention involves the assistance to the emotionally immature and unstable persons who need aid to adjust themselves to the demands of life. These people are potential alcoholics or susceptible persons who may succumb to this habit, especially in times of mental, emotional stress. Once they succumb, denying them alcohol is not easy for there is no depth to which they will not sink in their craving for alcohol. So a logical approach is to strengthen or inculcate resistance in individual.

Secondary prevention is to arrest the progressive course of this illness in the affected individuals before they become moral wrecks and social outcasts. This can be achieved by making arrangements for the expert diagnostic and therapeutic facilities. A special independent unit has to be established to study the problem of the ever increasing number of alcohol addicts. their treatment and rehabilitation. That would constitute the scientific approach to the problem of alcoholism and would contribute to the efficient educational and mental health services to the society.



SPECIALISTS:

A young medical man who runs off into a speciality, honestly believing that a human organ can be studied and treated separately, like the wheel of a watch, has not intellect enough to be a physician, and ought to have been discouraged from entering the ranks. He who undertakes it from mercenary motives ought to be frowned down, and told that his tendencies and faculties belong to the places where they sell their wares and souls for lucre, and call it business, not a sacred vocation.

—Medical world, 75: Jan. 4, 1952.

IN MEMORIAM



SATHEESWARAN,

(Second year)

IN MEMORIAM



MANICKAM,

(Final year).

Broken Heart

G. V. SUDHEENDRA, 1st Year.

ONCE a year he came to see me but refused to stay longer than a few minutes. I have pleaded with him and begged him on my knees. But his visits were always brief and he never spoke a word with me. I have been annoyed, I have felt angry but I could never resist the strange fascination he held for me.

His knock on the door, there was an uncertainty and diffidence about it, but it held all the music of the world for me. He would walk into my room, lost in thought. A searching look into my worried face, a casual glance all around and he would go away; where, I never knew.

Once after following him for an hour, I found to my surprise that he was leading me for the fourth time around the same park avenue. But when he saw that I was following him, he hurriedly turned into a lane and was soon lost to me.

I felt so mad at times, waiting for him to talk that I did not know whether to cry myself out or break my head against the wall. But his serene look made me calm and serene too.

One evening, as I went out for a stroll to lighten my heart, I saw him brooding, looking vacantly into space with a half-sad, half-serene look. I had the strongest temptation to lock him in my arms and plead my cause. I looked into his eyes and saw that strange questioning look. I imagined he was struggling to tell me something. My heart was cutting capers and my feet were glued to the ground. But even as I stood gazing, he walked away. Perhaps he did not see me.

But I was mad and I felt I must talk with him. I followed him at a short distance. With his arms folded behind, he walked slowly. Now and then I could discern that he was shaking his head slowly and I thought I heard him sigh.

He was pursuing a new path, the one that ran through the woods. Once he stopped to smell and enjoy the sweet cool air. He turned round and I had just time to hide behind the bushes. I watched him make his way to a red poppy flower that stood out bold and alone from an ugly shrub. He stretched his arm to pluck that flower. His arm was shaking and he looked so helpless. The flower was still in its place and he just stroked it, so gently and so fondly. I could see the tears in his eyes and he looked a picture of misery and despair.

The light was fading fast. I felt my heart attacked with a thousand poisoned darts but I was too sad to cry out. There was a little stream close by. I saw him walk to the edge, peer into the clear water and mutter something to himself. I edged closer to hear him better. The green weeds in that limpid stream and the tiny fishes that darted among them,—to these he was speaking of that rare thing in life, happiness and of the obstacles on the way. As he talked his sorrows away, I felt my anguished heart wrenched from me. My head reeled and I fell down with a thud. He swung round startled, like a frightened child. He bent over me and as soon as he recognised me, I saw him fleeing from me as if I were a ghost. The next morning some wood-cutters rescued me from the biting frost in a stupor. When I recovered, I searched for him everywhere but in vain.

Who was he and why did he mean so much to me? He was a lover like a thousand others, but a lover supreme and I was the loved, like a thousand others loved, but accursed. Crippled by a forced union and the untimely death of my mate, I lived forlorn in society like a child torn from its mother and left to perish in the jungle of beasts, wild and fierce.

IT ALL DEPENDS—

Filling out an application for dependents' aid, a coloured soldier answered "no" to the question as to whether he had any dependents.

"You're married, aren't you?" an Officer asked.

"Yes sir", the soldier replied, "but she ain't dependable".

—Cannoneers post, Camp Roberts, Calif.

Thrills of a Freshman

M. PETER FERNANDEZ, II M.B.

THE first days of a freshman in the medical college are a thrilling experience. Although it is one which everybody in the medical profession remembers vividly and, more than often, I expect, with mixed feelings, yet I hope that I shall not be called a bore to disclose how the younger generation reacted to it this year.

The first day we came to the college, we were bewildered: was this a professional college or was it not rather some Great Exhibition? What a variety of exhibits in the several buildings and the compound! We might stare at them the whole day and feel the same amazement at the end as at the beginning.

Look at these young men and women with steths hanging round their necks, or peeping out of their coat pockets or rolling in their hands. They look so important, so scholarly, going quietly from the college to the hospital. As he contemplates them, at once, a celestial happiness pervades the soul of the inexperienced onlooker, while he or she fondles the precious hopes, entertained for so long, to become one day—very soon!—as dignified and self conscious in the service of mankind.

Now what rare exhibits shall we find inside of these huge buildings around us? And which is the most wonderful? What is the chief attraction, the "clou" as the French says—or rather the "sancta sanctorum". Only the Philistine does not know how to answer this question. We all know that the Anatomy Dissection Hall is the grand spot and we have wished to see it for such a long time! How it looked horrid inside with all the ghostly bodies lying flat on the table, some torn to bits and some intact—yet not very attractive.

The first few weeks are for the freshmen like a nightmare: is the college a pandemonium? Can they believe any more what people have told them, that life in the medical college is heavenly bliss itself? Think of the V.I.P. these senior students who were always gazing at the junior students everytime they came across them. How awful for the freshers to be made to feel so small! And they knew they had to submit. Woe be to the audacious who could dare to retaliate! The senior's sarcastic laughs and pitiless looks would immediately put the unfortunate First Years in a delicate position. Having had such miserable experiences outside the class rooms we should have thought that atleast the canteen, yonder, would a haven of freedom and comfort. I must frankly confess that it was not. The moment we entered, all the cups went down from the lips and pairs of sinister eyes peered over their brims. There was something uncanny in all the eyes and ominous talk could be overheard or guessed. Were we not students like them? Or did they think we were rare specimens of ancient tribes? We sat down awe-struck and drank. God knows what, as though it were poison. Then we slipped away as quickly as possible to sniff freely the air under the tamarind tree.

This will seem, I am afraid, highly exaggerative—or perhaps sheer nonsense. Yet you, freshmen, my brothers, will you not bear witness to my statements? And I have said nothing of some lectures and lecturers. This is for very good reasons.

But let us not brood over the thrills of our first weeks! Soon deep observation and high thinking made the juniors flutter about with more confidence. Little by little, they felt more or less at home.

It is now high time for me to classify the juniors without overlooking the female element. In my opinion there are three classes of students—the A class, the B class and the C class. I don't mean here, the three batches, A, B and C of our first year which attend in turns the practical classes. This is a different classification altogether. The most interesting of the three classes is the C class of which you will soon hear. In it we must distinguish two sub classes, the (a) and (b) sections. Here are the percentages of these classes. A - 15%; B - 50%; C - (a) 20%; (b) 15%. What these classes are, I shall presently tell you. The A class comprise all those students who come into the institution with the intention of leaving it definitely at the end of five years having topped the list each year in the examination. Then are of a very peculiar type. They think that there is nothing else to do in life but pass examinations monotonously with high brilliance. These students are rarely seen outside the class rooms. Perhaps they receive invitations daily from the library or from

the museum. Like old dyspeptic people who regularly take their breakfast, dinner and supper, they are found in either of those places in the morning, at noon and in the evening. What a set of people they will be in their ripe years, I can't imagine.

Now I do not mean that those who do not belong to this class join this institution with no intention of leaving it at the end of five years. But there are exceptions everywhere.

Let nobody think that I am debasing the A class students. In fact they are the best, since they fulfil their most important duty as students; yet they do not care for their health nor for other activities as they ought to. So I am just giving those people a piece of advice. Let them heed it and I am sure they cannot be excelled by anyone else.

The next class, the B class is a big one too. The percentage is great when compared with the rest. Those who belong to this class are the "moderates". Their studies are just the average or a little above, just enough for a pass. They are more active than studious. We cannot find them in the museum or in the library during their leisure hours and if at all we should, it would not be for studies. Usually this set of people will be found during their leisure periods in the canteen with a sip and a puff or out under the trees chatting with their kind, I mean the people belonging to the B class. They show interest in sports, in organising the social functions of the class and in taking part in them. In extra curricular activities like the N. C. C. and games, they are ambitious to show off their talents. But for this set of people, the college would be duller. Sometimes due to over confidence this set of people may unfortunately remain for six or seven years in the college before leaving it.

Now comes the most interesting group, the C class. It can be divided into (a) and (b) sections as I have said. The (a) section consists of about 20% of the freshers. Perhaps they are the people who have come to satisfy a would-be father-in-law! They don't seem to have any interest in studies—nor in extra curricular activities either. Even among them there are two types. One hailing from the well-to-do-families. They are almost never found in the classrooms, but in theatres, hotels and canteens. Their rare visits to the class halls are superfluous, since they serve so little purpose. They are always in deep thought as to what to do next. But these people are an exception. The rest of the (a) section is coming from villages, they look vaguely at things hardly realising that they are in a town. Let us hope they will soon realise it! They always hide their faces and fear to be looked at.

The (b) section is made of students who are extremely active outside the college. They are successful neither in their studies nor in any of the activities of the college. Perhaps they have decided just to stay as many years as possible. I hope they don't leave one day, in despair.

One of the thrills of a Freshman is to find out the class to which he himself belongs. I have tried hard to come to some conclusions about myself and I have discovered something most amazing. It is that one must not believe that the A, B and C classes are water-tight compartments; there exist no such rigid distinctions and I am beginning to be thrilled by the thought that I might belong to more than one class!

But another thought is making life increasingly pleasant for me: soon I shall no longer be a Freshman! Oh, the day I am a senior! Poor Freshers, God help you!

—★—

INSULTS—

Thermometers aren't the only things that are graduated with degrees without having brains.

* * *

Some tortures are physical and some are mental
But one that's both is dental.

—Ogden Nash.

* * *

A potent quack long versed in human ills
Who first insults the victim whom he kills
Whose murderous hands a drowsy bench protect
And whose most tender mercy is neglect.

—George Crabbe.

* * *

The wellbred people contradict other people,
The wise contradict themselves.
The old believe everything;
The middle-aged suspect everything;
The Young know everything.

—Oscar Wilde.

Sunset from a Verandah

Miss. N. INDUMATHI.

THERE are certain moments in a man's life,—or, in the life of a woman, for the matter of that,—when he escapes and elevates himself far from the madding crowd of humanity, nay, comes into the very palpable omnipresence of the bountiful Maker and stands, like an innocent child, surprised and awed, contemplating the glory that is God. Such supreme, soul-stirring moments of unalloyed bliss are necessarily few and far between in this modern, mundane, materialistic world of ours but they may come over you on looking at the breathtaking panorama of Nature, they may dawn with the blossoming of a smile on an unknown maiden's face, or come dancing over the ripples of a child's laughter. Wordsworth's heart leapt up in joy when he beheld a rainbow in the sky. Intimate communions with Nature may serve as welcome tonics to our tired body, mind and soul. Solitude itself in the heart of Nature becomes a speaking presence.

Such a moment overwhelmed me when I happened to look at the sunset the other day and a supreme, inexplicable, inexpressible joy filled me. The world stood still for me that evening. Time stood still. I stood still. Sorrows shared with others, they say, become lighter and joys become sweeter by the same process. So I will try to share it with you.

My house is in one of the busiest thoroughfares of the city. Even here, with the incessant rattling of trams and buses, the heavy thuds of loading and unloading of timber, the gay laughter of children in rags, the ever-present hawkers singing the merits of their merchandise in lilting voices, beggars, their voices raised in altercation or subdued in supplication,—even here, right in the centre of such a Babel, one could find the greatest peace in the world by just stepping out into the backyard. For here, strangely enough, all is peace and quiet and you are the monarch of all you survey.....the plot of green verdure with its fencing pools and puddles left over by yesternight's rain beating hollow the made-up beauty and well-kept wealth of a lawn.....a white cow grazing contently in the fields while a buxom young lass of perhaps sweet sixteen sits milking it.....its calf sprinting up and down the land with its tail raised high and victorious like a proud banner in the wind.....a little boy gathering flowers at the farther edge.....and the glorious sunset scattering gold over the green in lavish superabundance in one last attempt at regal pomp and splendour.

Ah, your eyes suddenly light up with surprise and pride, yes, that gourd which you may have despised as unpoetic thrills you now with the richness of its blossom. Small yellow flowers peep from among the huge green leaves. No wonder they say, "POOSTHAE BEERA POOCHASTHAE", (if anything blooms, it should blossom like the gourd). No need for any daffodils here.

There in the distance you see the spire of your college, a mere man-made thing trying audaciously to peer into the secrets of the heavens. And then your eyes sweep the heavens themselves. What a sight! What a riot and play of colours! What billowy clouds rolling across the skies, shaping themselves into giants, mountains, castles and the like! You look with wonder at the splendour of the sky and the thought comes to you, amidst such a wealth of colours why is there not a speck of green in the sky? Perhaps the surfeit of green below leaves nothing for sky.

A bell peels out in the distance. You bow your head low in silent prayer and stand rooted to the ground, absolutely motionless, forgetting yourself, your surroundings and your neighbours in serene contemplation of the glory that is God.



WOMEN AT WORK—

"She told me", a woman complained to a friend, "that you told her the secret I told you not to tell her".

"Well", replied her friend in a hurt tone, "I told her not to tell you I told her".

"Oh, dear", sighed the first woman. "Well, don't tell her I told you that she told me".

—H. L. Gee.

"For the last time", a husband shouted toward the bedroom, "are you ready to go?"

"For heaven sakes, be quiet", retorted his wife. "I've been telling you for the last hour that I'll be ready in a minute".

—The Furrow.

A woman driver stopped for a red light and failed to move when it turned green. When the green light came on for the second time and she still showed no signs of moving, the traffic officer walked over and said politely, "What's the matter, lady, aint we got no colours you like?"

—Sid Ascher.

Various Methods Employed for Eosinophil Counts

From

PHYSIOLOGY DEPARTMENT

Madras Medical College.

WITH the advance in the knowledge of the relationship between the number of the circulating eosinophils and the activity of the adreno-cortical axis, and the increasing use of ACTH in diagnostic and therapeutic procedures there is more and more interest evinced, as seen in current medical literature, in the various methods used for determining the eosinophilic levels in the peripheral blood.

(1) **Indirect Computation:** The total leucocyte count is made by the familiar counting chamber method using the Thoma diluting pipette and the diluting fluid containing Gentain Violet, Acetic acid and distilled water. Then a differential count is made by a blood smear stained with Leishman stain and computing the absolute count of the Eosinophils from the results so obtained.

(2) Of late the chamber method of counting eosinophils is used in preference to the above method.

Apparatus used: (A) Thoma diluting pipette for W. B. C. count and (B) any one of the various chambers available, preferably having large volume like the Neubauer counting chamber.

The essential principle of this method is to count eosinophils which are stained by a suitable acid stain and at the same time having the R. B. Cs. and other leucocytes destroyed so as not to interfere with counting. The procedure is almost the same as for a total leucocyte counts.

Procedure: The diluting fluid should contain no suspended impurities as eosinophils tend to aggregate round them in the counting chamber. So, before use, the fluid is centrifuged or filtered and the clear fluid only is used. The finger is pricked after necessary sterilization.

Blood is sucked upto mark 1 and then the fluid is drawn to mark 1½. The pipette is well rotated between the palms to ensure a thorough mixture and about 3 to 15 minutes depending on the type of the diluent, time allowed either in the pipette itself or in the counting chamber after charging to enable the eosinophils to take up the optimum staining and for the destruction of other leucocytes and erythrocytes. The counting chamber is then charged with the fluid and eosinophils in all the four large squares (4 sq. mm.) are counted and the average for one square is taken. From this the number of eosinophils per cubic millimetre of blood is derived. During the last few years various workers have introduced different diluents. The following diluting fluids, each having a few advantages and a few disadvantages, have been recommended.

1. (1) Acetone diluents—(a) Dungen's soln.
(b) Thorn's "
(c) Rud's "
(d) Speir's "
(2) Propylene Glycol diluents—(a) Randolph's soln. ' of
(b) Pilot's modification
 Randolph's soln.
(3) Urea diluent—Manner's soln.
(4) Hinkleman's soln.

(A) ACETONE DILUENTS:--

- | | | |
|----|--|----------|
| 2. | (1) Dunger's original solution. | |
| | Aqueous Eosin | 0.1 gm. |
| | Acetone | 10 c.c. |
| | Distilled water | 100 c.c. |
| 3. | (2) Modification A—Thorn. | |
| | Aqueous Eosin | 0.1 gm. |
| | Acetone | 5 c.c. |
| | Distilled water | 95 c.c. |
| 4. | (3) Modification B—Rud. | |
| | Magdala Red | 0.2 gm. |
| | Acetone | 12 c.c. |
| | Na ₂ CO ₃ 10% | 1.2 c.c. |
| | Distilled water | 90 c.c. |

- | | | |
|----|-----------------------------------|----------|
| 5. | (4) Modification C—Speirs. | |
| | Phloxine B | 0.02 gm. |
| | Acetone | 12 c.c. |
| | Distilled water | 85 c.c. |
| | Detergent (Alconox) | 0.02 gm. |

The acetone diluents consist of the following materials :

- (i) **Acid dye:** Such as eosin or Phloxine—to stain the eosinophil granule.
- (ii) **Water:** Mixed with blood produces swelling and rupturing of the blood cell membranes. The eosinophil, being more resistant to lysis than other blood cells, does not lyse.
- (iii) **Acetone:** This has an inhibitory effect on the lytic action of water and the effect is proportionate to the concentration used.
- (iv) **Detergent (as in Speirs):** This is added to reduce the surface tension of water. It permits more rapid mixing of blood and diluent and increases the rate of staining of the eosinophil.
- (v) **Alkali:** (as in Rud's). This increases the lytic action of water especially on the R.B.C.'s and neutrophils. It also increases the staining rate of eosinophilic granules possibly by affecting the permeability of cell membranes.

It may be seen that the dye, water and acetone are the chief ingredients of this type of diluent. The lytic action of water varies depending upon the proportion of water to blood. Lysis of the R.B.C.'s does not always occur when dilutions of 1:10 are used. However at dilutions 1:20 and still higher dilutions, complete lysis occurs. The amount of acetone added to the water depends in part upon the ratio of the diluent to blood. Approximately a 15% solution is optimal for normal human blood in a 1:20 dilution but the amount may be varied, depending upon the fragility of the cells.

(B) PROPYLENE GLYCOL DILUENT:—

6. (i) **Randolph's original solution (two components)**

Solution (a): One per cent solution of Phloxine in	
Propylene Glycol	 50 c.c.
Aqua distillata	 50 c.c.

Solution (b): One per cent solution of Methylene blue in Propylene Glycol	....	50 c.c.
Aqua distillata	....	50 c.c.

7. (ii) Pilot's modification of the above:—

Propylene Glycol	....	50 c.c.
Distilled water	....	40 c.c.
One per cent Phloxine in water	....	10 c.c.
Ten per cent Na_2CO_3 in water	....	1 c.c.

Randolph's fluid: T. G. Randolph has devised this type of diluting fluid using a mixture of an acid and basic stain and propylene Glycol as vehicle. The advantages of using the fluid are as follows:

The various leucocytes take their appropriate stains and so all the white cells can be counted and simultaneously differentiated also. The R.B.C.'s are only rendered invisible (except by dark ground illumination). The absence of lysis of any of the cells is a great help in counting because of the lack of any cell debris. Also discrepancies in the count due to evaporation consequent on keeping for long time after charging the chamber are obviated by the use of Propylene Glycol—a viscous diluent which does not evaporate too soon. Also errors in filling the pipette, sedimentation of cells in the pipette, clumping of white cells round suspended impurities and overflow while charging the chamber are all avoided due to viscosity of the medium. The white cells appear spherical, larger in size and not shrunken as with fluids employing acetic acid.

The Procedure: The diluting fluid consists of two components—the Methylene blue and Phloxine components of the stain must be kept separate until just before use, for after they have been mixed for 4 hours, precipitation of the dyes occurs and with it the loss of differential staining.

Equal number of drops of both of the above fluids are mixed afresh in a watch glass just before the experiment. Blood is sucked upto mark 1 and the diluent upto mark 11. Pipette is rotated between the palms to get a good mixture and after standing for 10 to 15 minutes the counting chamber is charged. There is no deterioration of the count obtained when the fluid and blood are left in the pipette overnight. All the leucocytes are however stained and a high power objective is necessary for differentiation of the eosinophils. The eosinophils appear pink in colour and larger in size. The neutrophils and basophils appear bluish and are

indistinguishable except by the number of lobes of nuclei. The mono-nuclears also take up the basic staining but it is not possible to differentiate between the lymphocytes and monocytes. The counting is done in all the four large squares (4 sq. mm.) of the chamber and the result derived therefrom. *The total and differential W.B.C. counts are obtained simultaneously with the same drop of blood.*

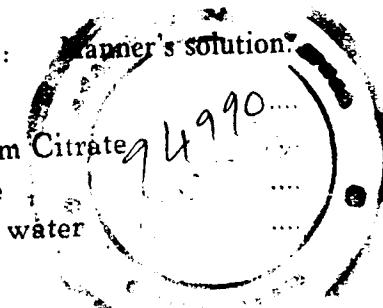
Pilot's Modification: Pilot investigated the various counting fluids. From them he selected as the best, those of Randolph (1947) and Rud (1947) and combined the better properties of each in his diluent. The main disadvantage of Randolph's fluid as an eosinophil counting medium is that counting is slower chiefly because of the presence of other cells in the counting field and also a high power objective is necessary for differentiation of eosinophils. The main disadvantage of Rud's fluid is the use of Acetone as a vehicle. As this substance is highly volatile, the chambers must be charged at once and kept in a moist petri dish for 15 minutes before making the count.

Pilot therefore decided to use the base employed by Rud in Propylene Glycol vehicle of Randolph. Since the leucocytes other than the eosinophil were lysed, only a single stain was necessary. He compared his diluting fluid with those of Randolph (1944) and Rud (1947) and Dunger (1920) employing double counts in a series of 1000 observations of human blood, with results more nearly constant than those obtained with other fluids.

Procedure: The finger is pricked and blood sucked upto mark 1 in the pipette. The fluid is sucked upto mark 11. It is necessary to wait for 15 minutes to allow for proper lysis and staining; these occurring in either pipette or chamber. The eosinophils are stained red and are easily identified and counted. The use of low power objective is adequate, for the eosinophils alone are stained and visible. Counting is thereby easy and rapid. There is no drop in counts done within 3 hours of collection and that there is an average drop of 35% in the count when the pipette lies for 24 hours. All the cells in the four large squares are counted and the absolute count of eosinophils calculated.

(C) UREA DILUENT:

Urea	....	50 gm.
Trisodium Citrate	....	0.06 gm.
Phloxine	....	0.1 gm.
Distilled water	....	100 cc.



The substitution of urea for propylene glycol or acetone has recently been suggested by Manners. He was able to obtain satisfactory counts after allowing the pipette to stand for 30 minutes before shaking and counting.

(D) HINKLEMAN'S METHOD:

Eosin yellow	....	....	0.5 gm.
Formalin	....	....	0.5 cc.
Phenol (95%)	....	....	0.5 cc.
Distilled water	....	....	100 cc.

This fluid is not entirely satisfactory for counting eosinophils. A considerable number of "ghost cells" and ruptured cells are seen. One frequently encountered indeterminate forms that could not with certainty be classified as eosinophil. But eosinophils can be easily identified and a quick count can be made.

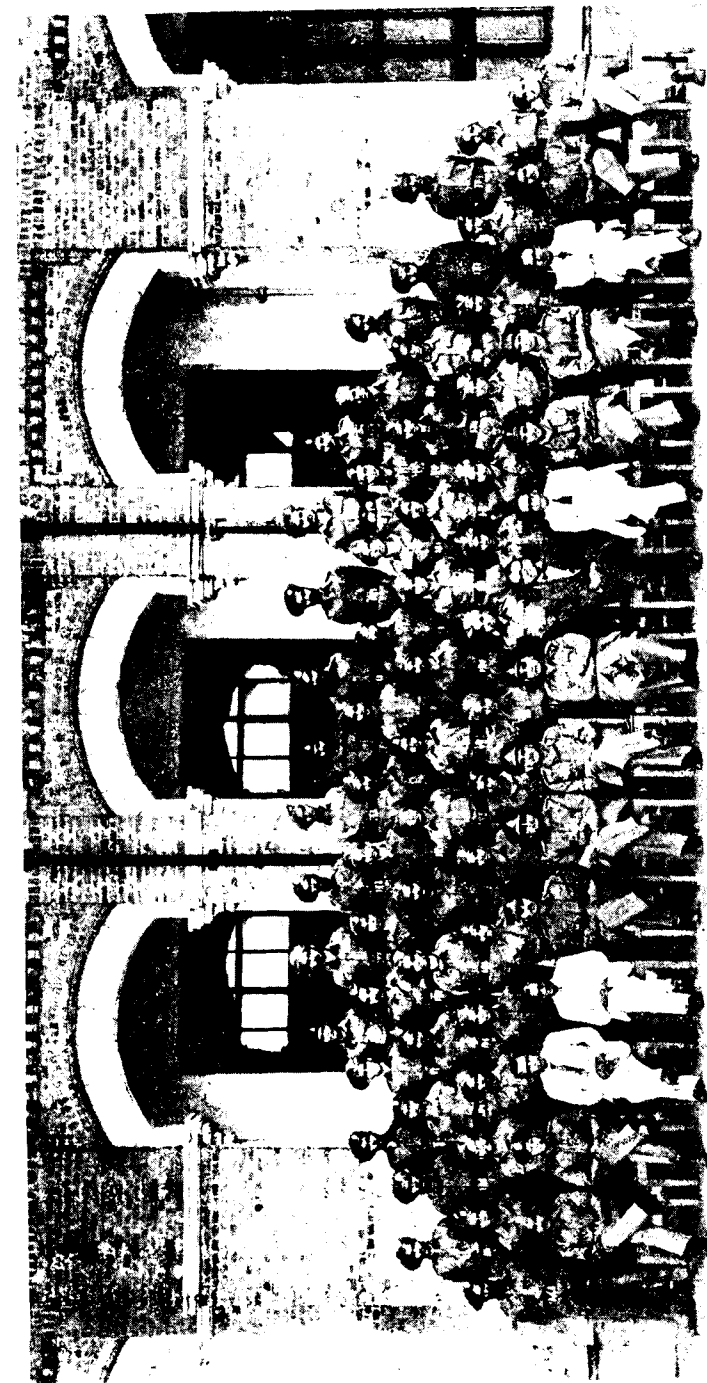
Thanks are expressed to Dr. D. V. Subba Reddy, Professor of Physiology for his valuable suggestions and kind help.

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6th MADRAS MEDICAL COMPANY, N.C.C.



Photograph taken on the occasion of the 3rd annual Company Social on 21st January 1952 when Lieutenant-General D. R. Thaper, C.I.E., O.B.E., D.C., A.F.M.S., Ministry of Defence, presided.



The M. M. C.
Cadets in action.

Lt.-General D. R. Thaper inspecting the Company on Parade



Cadets on Training
Loading a patient in Ambulance Car.



Mrs. Mohite, awarding shield to
Cpl. T. Srinivasan.



Mani Sundaram.



Dakshinamoorthy.

6th Madras Medical Coy. National Cadet Corps

Cdt./Sgt. T. SRINIVASAN

WITH the attainment of independence, nationalisation was very much in the air. Towns, institutions and roads were renamed or reconstituted and the University Officers' Training Corps was not spared. The National Cadet Corps arose in July 1949, with a new vigour and a bright future.

The 6th Madras Medical Company N.C.C. is sixty strong, the S. M. C. and M. M. C. contributing equally. In the year under review 1951-1952, there were usual parades in Military as well as Technical (Medical) subjects. Company Drill and Weapon Training were taught by Jem. Ramanujam A.M.C., Hygiene and Sanitation, First Aid and Field Medical Unit by Capt. Dr. M. Munuswamy N.C.C., our Second-in-Command and Map reading and Message writing by Capt. V. D. Paliwal A.M.C., our Commanding Officer. Jem. Rajaram, A.M.C. our chief instructor who has won a permanent place in our hearts has been transferred. Jem. Ramanujam A.M.C. has succeeded him aptly and is already commanding our respect and admiration. There have also been changes in the regular army N. C. Os.

In October, the 'C' Certificate examination was held. Three cadets only were eligible and all of them passed the examination. Among the three, one is from the M. M. C.

The Annual Camp, as usual, was the climax of our activities. 53 cadets attended the Camp at Avadi from 9th to 23rd of December 1951 and underwent an intensive training especially in military subjects. Life was certainly not a bed of roses but it could be lived quite well, we learnt, even without cots, chairs, flush-out latrines, shower-baths and such civilised addictions. If there were only three bath-rooms

working two hours a day, we had fresh air to breathe, grounds to play in and good food in plenty, the last unmasking many a latent glutton in the company. From 5.30 a.m. to 3.30 p.m., marches, parades and lectures were strenuous enough to build up brain and brawn. After tea at 4 o'clock, the rifles were put away and it was time for relaxation and games. We had one Night Compass March (I wish you were there to enjoy the thrill of it) and visits to the Military Hospital, Avadi. We are sorry that neither the Dean nor the professors came to see us at work.

On the penultimate day of the Camp the 'B' Certificate examination was held for the senior cadets. I am proud to say that out of the 20 who passed the examination, 14 are from our College. The Camp is an invaluable training in discipline, adaptation to circumstances, efficiency and leadership. Doubting Thomases are welcome to look us up at the next camp.

The Annual Day of the Company was held on 5th March 1952. Lt.-Gen. D. R. Thapar, C.I.E., O.B.E., D.G. A.F.M.S., New Delhi and Mrs. Mohite graced the occasion by presiding over the colourful (olivegreen) ceremony and distributing the prizes.

The following is the list of certificate awards and prize winners :

'C' Certificate :

1. Cdt/CSM. M. A. Saleem.

'B' Certificate :

1. Cdt. R. Ramamurthi
2. „ Sgt. C. R. Dakshinamoorthi
3. „ M. Venkateswara Sarma
4. „ B. Balakrishna Hegde
5. „ Sadananda Ballal
6. „ V. Viswanathan
7. „ T. Subramanian
8. „ T. E. Seshachari
9. „ S. Audikesavan
10. „ T. Dorairajan
11. „ N. Radhakrishna Rao
12. „ P. Sundariah
13. „ P. Satyanarayana Rao
14. „ N. Lakshmipathy.

PRIZE WINNERS

Cent Percent Attendance :

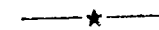
1. Cdt. U/O P. M. Manisundaram
2. „ C.S.M. M. A. Saleem
3. „ Ramamurthi
4. „ B. Balakrishna Hegde
5. „ P. Sundariah.

HIGHEST MARK IN 'B' CERTIFICATE

Cdt. Sgt. C. R. Dakshinamoorthy.

Inter Squad Drill Competition : No. 3 Squad commanded by Cdt./Sgt. T. Srinivasan.

Night Compass March : No. 2 Squad commanded by Cdt./U/O. P. M. Manisundaram.



DEFT DEFINITIONS—

- Repartee :** What you would say if you have another chance.
- Secret :** Something you tell one person at a time.
- Shyness :** A mixture of diffidence and conceit.
- Middle age :** When a man stops wondering if he can escape temptations and begins to wonder if he is missing any.
- Singing :** Man's bath right.
- Umbrella :** A shelter for one and shower bath for two.
- Etc. :** Sign used to make others believe that you know more than you do.
- Jealousy :** A friendship one woman has for another.
- Sinister :** A woman who has not married.
- Boy :** Noice with dirt on it.
- Polygon :** Man with more than one wife preferably living.

OCTOGRAPH

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The Medical Relief Wing

M. M. C. Assn.

T. S. SUBRAMANIAN,

Executive Secretary.

MOMENTOUS changes have occurred in the New India in the last few years. Our outlooks had to be reoriented and new responsibilities shouldered. New challenges have come and the Madras Medical College has a long and glorious tradition of rising up to the occasion. Doctors and Students of this institution have responded to the clarion call of duty from famine and disease stricken areas, "to heal and to give hope" whether in the Bengal famine of 1943 or in Rayalaseema during last May and June, when parties of House Surgeons and Senior Medical Students did yeoman service under adverse and difficult conditions. It was rather unfortunate that all these missions had to be undertaken under individual enterprise rather than under the auspices of the College. To canalise the constructive enthusiasm of the students of the College, the Medical Relief Wing was formed with Dr. Sanjeevi, M.D., Professor of Medicine as Chairman. Objective:—To carry medical aid and service to the slumps of the City and adjoining villages.

For a start, the village of Pakkam was selected, in consultation with the Director of Rural Welfare. This is a medium sized village, with a population of 5,000. There are no medical facilities within a distance of 15 miles from the village.

The first trip was made on 24th August '52 with 3 Doctors and about 30 students. About 80 cases were examined and treated. Medicine for a week was dispensed where necessary and a stock of common mixtures and other drugs was left at the Women's Welfare Centre to be dispensed by the Maternity Assistant. With the help of the Women's Welfare Organiser and the Village Development Officer, a house-to-house survey to assess the sanitary and health conditions, economic status etc., is also being undertaken. So far we have made four visits, the daily attendance averaging a hundred patients. Shortly, it is intended to open an

eye camp at Pakkam, thanks to the noble gesture of one of the members of the staff to visit this place and do eye operations with his own equipment.

As it is with every voluntary effort, our main handicap is finance. (Every trip costs as much as Rs. 60). The expenses are being met from subscriptions and donations, as well as a lump sum grant of Rs. 500 from the Director of Rural Welfare.

The main aim of the Wing is to make the students of the College more and more at home with the people in their natural surroundings and to help them get an insight into their mode of life, their problems and difficulties. In these days of "going to the villages" this will also help to disprove the popular allegation that students of modern medicine are averse to and incapable of rendering rural medical aid.

I will be failing in my duty if I do not express our indebtedness to the authorities especially the Dean of the Madras Medical College, the Warden of the Hostel and Dr. Sanjeevi, Professor of Medicine, who have been very helpful at all times. I thank the House Surgeons and Doctors who accompanied us at considerable inconvenience to them and all the rest who made the work a success.

It is hoped that more and more co-operation will be forthcoming from the staff and students for this good cause.

THE CHINESE TOUCH—

There is the wisdom of the foolish,
The gracefulness of the slow,
The Subtlety of stupidity,
The advantage of lying low.

—Lin Yutang.

Blessed are the idiots for they are the happiest people on earth.

—Lao Tse.

Spit forth Intelligence.

—Chuan Tse.

It is difficult to be muddle-headed
It is difficult to be clever but still
More difficult to graduate from
Cleverness to muddle-headedness.

—Cheng Panchiao.

The wisest man is often one who pretends to be a "damn Fool".

—From Lin Yutang's *The Importance of Living*.

Madras Medical College Students' Clinical Society

SAMUEL KRISHNAMURTHY, B.A.

President: G. Victor, M.D.

Secretary: Samuel Krishnamurthy, B.A.

Working Committee Members:

Mr. N. Mohandas (Treasurer)
Mr. W. D. Netto.
Mr. G. Arjundas.
Miss Ida Rodrigues, (Asst. Sec.)
Miss V. Ramanamma.
Miss A. C. T. Thankam, B.A.

INTRODUCTION: The inauguration of the Students' Clinical Society on the 12th of July 1952 is the unfoldment of a cherished dream that many of us held. To have the idea translated into action it needed some initiative somewhere, and when a circular was sent, on 7th July as to the desirability of having such a Society for our College, there was universal welcome from all sections of Students. This idea gradually picked up enormous momentum and popular support, which heartened and encouraged me very much. Accordingly, I met the Dean on 9th July 1952 and encountered a still kinder welcome and valuable advice. The Medical Registrar, according to the advice of the Dean, was chosen as our first President (later to be ratified by the General Assembly). With the help of the President I managed to pass through the initial hurdles and the Business Meeting was called for on the 12th July, where some important constitutional points as to the governing of our Society were discussed. In that meeting the members ratified the President's appointment and elected the Secretary giving him the power of choosing his Cabinet.

Aim: I wish to quote under this heading the I & II Article of our constitution as passed in the General Assembly by three readings.

Article I. Clause 1. This assembly is to be called "Madras Medical College Students' Clinical Society".

„ 2. This is a separate unit by itself and functions as such having separate office bearers for itself.

„ 3. This Society is entirely for the students formed by the students, to be governed by office-bearers elected from among the students, with the exception of the President.

Article II. Clause 1. The aim of the Assembly is to bring in students together for a healthy discussion of Subjects that are in the normal curriculum of the course.

„ 2. The Society will on no occasion turn into a place of discussion of extra curricular activities of any form except discussion on an amendment to the Constitution if that was given notice to and allowed in the House.

PROCEEDINGS.

I. 12th July (Saturday) with the President in the Chair--Business Meeting.

(i) Election of office-bearers.

(ii) First reading of Constitution.

II. Meeting—19th July (Saturday) with the President in the Chair and Dr. Varma, M.S., as the Honourable Observer, the following cases were discussed.

Dr. U. M. Rao's Unit:—1. A Case of Malignant Melanoma—Presented by Mr. K. S. Mani, B.Sc.—V year.

Dr. D. S. Iyer's Unit:—2. A Case of Parotid. Tumour—Presented
by Mr. A. Varadarajasundaram, B.A.

Second reading of Constitution.

III. Meeting—2nd August (Saturday) with the President in the Chair and Dr. K. Ramachandra, M.D., as the Honourable • Observer the following cases were discussed.

Dr. R. Subramaniam's Unit:—1. A Case of Tabes Dorsalis—Presented by Mr. G. Arjundas—V year.

Dr. J. A. S. Masilamoni's Unit:—2. A Case of Myeloid Leukaemia—Presented by Mr. T. Dorairajan—V year.

Third reading of Constitution.

IV. Meeting—16th August (Saturday) with the President in the Chair and Dr. (Miss) Rajeswari as Honourable Observer the following cases were discussed.

(1) A case of Chorion Epithelioma—Presented by Miss Ida Rodrigues—V year.

(2) A case of III degree Prolapse Uterus—Presented by
Mr. Venkatasubba Rao—V year.

The Dean honoured us by his presence in the meeting among the visitors and expressed his gladness at the "interest shown by the students" in the discussion.

V. Meeting — 30th August (Saturday) with the President in the Chair and Dr. M. Sadasivam, M.S. as the Honourable Observer the following cases were presented for discussion.

Lt. Col. S. Lal's Unit:

(1) A Case of Ectopic Kidney—Presented by Mr. N. Mohandas—
V year.

(2) Short Cases—(i) Cirroid Aneurysm } Presented by Mr. T.
(ii) Co-arctation of }
Aorta } Dorairajan—V year.

The short notes for the cases I have given separately.

VI. Meeting—with the President in the chair and Dr. Narayana Rao as the Hon'ble Observer the following cases were presented for discussion.

(1) A Case of Pleural Effusion—Presented by Miss A. C. T. Thankam, B.A.—V year.

(2) A Case of Rheumatic Aortic disease with Hemiparesis—
Presented by Miss Suraiya Begum—V year.

Conclusion: There has been a steady increase in the enrolment of members to the Society. The President has been a constant source of encouragement and help, never failing to do his best all through these days and on the eve of his laying down his office as President of our Society at the end of his term of office by the end of this month, we as members are all bound to thank him with all our hearts for the untiring enthusiasm with which he encouraged us all through. Especially during the days of the starting of the Society the initial hurdles were many and if our Society has gained such a stand in the College to-day, it is not exaggerating if I say, it is mainly due to the President.

The Dean has never failed us to help whenever he was approached and the interest he shows in the progress of our Society is an inspiration to the office-bearers as well as to the Students taking part in the activities. That a person of his office should take so much care and interest in our activities in spite of his heavy work is something more than we can dream of.

There will come a day when our Society will be the foremost feature of our College. Already we are in the lead among our Sister institutions in the way we conduct our Clinical Meetings. This being my first and last report, I wish to thank on my personal behalf one and all of you for the way in which you have all encouraged me and co-operated with me.

THANK YOU!

—★—

A new York teacher, annoyed with his clock-watching students, covered the clock with cardboard on which he lettered: "Time will pass. Will You?"

—A. J. Rhaldi.

*

*

*

It was an interminable speech but finally he wound up. "I want land reform. I want housing reform—I want educational reform.....I want....." Just then a bored voice in the audience interrupted "Chloroform".....

—A. J. Rhaldi.

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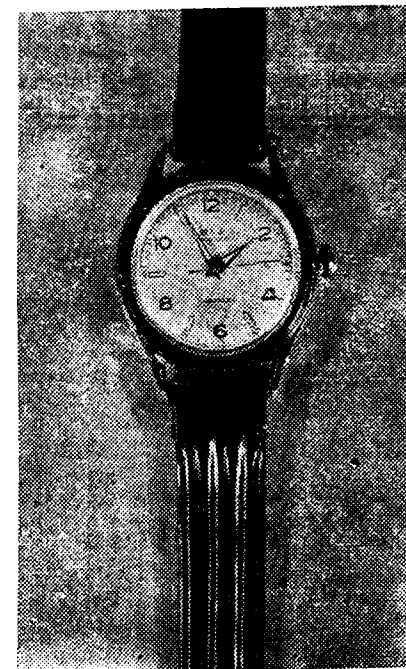
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REPUTE
RATTAN BAZAAR, MADRAS - 3
PHONE : 2696
GRAMS : NECKLACE

SPORTS:

Results of Inter-Class Sports for Dr. R. V. Rajam's Shield

(COLLEGE DAY SPORTS)

ATHLETICS

EVENT.	WINNER.	RUNNER UP.	RECORD HOLDER.
100 Meters Race	B. S. Wilson	V. Jayakumar	S. Shanmuḡasundaram.
200 Meters Race	B. S. Wilson	V. Jayakumar	S. Shanmuḡasundaram.
400 Meters Race	B. S. Wilson	R. J. Rajasekar	S. Shanmuḡasundaram.
800 Meters Race	R. J. Rajasekar	L. Appasamy	Lakshmanan.
1500 Meters Race	R. J. Rajasekar	Rajakumar Das	R. J. Rajasekar.
110 Meters Hurdles	V. Jayakumar	Samuel Devaraj	J. W. Desmond.
200 Meters Hurdles	B. S. Wilson	V. Jayakumar	S. Shanmuḡasundaram.
High Jump	J. K. B. Chandra	V. P. Subbian	S. F. D'costa.
Long Jump	B. S. Wilson	V. Jayakumar	S. F. D'costa.
Hop Step & Jump	B. S. Wilson	V. Jayakumar	S. F. D'costa.
Shot Put	Indra Pandian	Sridhara Menon	J. C. A. Dique.
Discus Throw	C. S. Mohan Das	T. Subramanian	D. J. Toomey.
Javelin Throw	P. R. Ramasamy	S. P. Raṅganathan	G. F. Noris.
Hammer Throw	Indra Pandian	V. P. Subbian	G. W. Bird.
Fast Cycle Race	Sri Ram	R. J. Rajasekar	...
Fast Cycle Race (Ladies)	Miss Mohanalakshmi	Miss Dorin D'cruz	...
100 Meters Race (Ladies)	Miss S. Mardi	Miss Vimala Savarkar	Miss U. Harḡreaves.
Low Hurdles (Ladies)	Miss S. Mardi	Miss Celine Pinto	...
Long Jump (Ladies)	Miss S. Mardi	Miss Rebecca Mathew	...
Relay Race (Men) (Inter class)	Staff	Fourth Years	...
Relay Race (Ladies)	Fourth Years	Third Years	...

EVENT.	WINNER.	RUNNER UP.
Foot Ball Throw (Ladies)	Miss S. Mardi	Miss Sogra Bi.
75 yds. Skipping Race (Ladies)	Miss S. Mardi	Miss L. Natesan
Tug of War (Men)	Final years	Second years.
Sack Fight	Viehra	Sridara Menon.
1500 Meters open	Rangasamy (Loyola)	Ramasamy (Presidency)
Old Students Race (Below 45 years)	Dr. V. P. Naidu	Dr. M. N. Guruswamy.
Staff & Old Students Race (Between 45-55 yrs.)	Dr. K. C. Jacob	Dr. Raghavachari.
Old Students Race (Ladies)	Dr. Miss Ammu Nair	Dr. Miss Avvai.
Staff & old Students walking Race above 55 yrs.	Dr. Capt. Sivasubramania Mudaliar	....
N. C. C. Race	Cdt. Visvanathan	L/cpl. Christopher.
Champion Athlete	Men : B. S. Wilson Women : Miss S. Mardi	

GAMES

Tennis Singles	K. V. Gandhi	M. R. K. Rao.
Tennis Doubles	Dr. K. C. Jacob & Mr. Swaminathan	K. V. Gandhi & M. R. K. Rao
Mixed Doubles	Radhakrishna Rao & Miss L. Natesan	M. R. K. Rao & Miss Dorin D'cruz.
Ladies Singles	Miss L. Natesan	Miss Kuntala.
Ladies Doubles	Mrs. Susheela & Miss D'cruz.	Miss L. Natesan & Miss Soona Irani.
Cricket	Fourth years	Staff.
Best Batting Average	B. S. Wilson	....
Best Bowling Average	B. S. Wilson	....
Hockey	Fourth years	Staff.
Foot Ball	Second years	Fourth years.
Basket Ball	Third years	Staff.
Volley Ball	Second years	Staff.
Badminton (Ladies)	Final years	Third years.
Tennikoit (Ladies)	Final years	First years.

ROLL OF HONOUR

Certificates of Honour for the session 1951-'52.

CHEMISTRY :

I Certificate of Honour	....	S. Lakshminarayana.
I Certificate of Honour	....	R. Govindan.
II Certificate of Honour	....	M. M. Sampath.
II Certificate of Honour	....	H. Balasubramanyan.

ANATOMY :

I Certificate of Honour	....	R. Narayanan.
II Certificate of Honour	....	C. R. Subramanian.

PHYSIOLOGY :

I Certificate of Honour	....	M. D. Kasyapan.
I Certificate of Honour	....	Miss T. S. Kanaka.

BIOCHEMISTRY :

I Certificate of Honour	....	R. Kamala & M. D. Kasyapan.
II Certificate of Honour	....	P. Lakshmi.

PHARMACOLOGY :

I Certificate of Honour	....	K. M. Kalappa.
II Certificate of Honour		G. Radhakrishnamurthy.

BACTERIOLOGY :

I Certificate of Honour		K. M. Kalappa.
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PATHOLOGY :

I Certificate of Honour		T. Dorairajan.
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HYGIENE :

I Certificate of Honour		Miss B. Janaki & Miss Premala Sathe.
II Certificate of Honour		G. Arjundas.

PRIZES

List of Students who were Awarded Prizes for the session 1951-'52.

Name of Prize.	Subject.	Name of Winner.
1. The Maitland Memorial Prize	Clinical Medicine	Mrs. Sushila Rajaġopalan.
2. The Branfoot Memorial Prize	Midwifery and Gynaecology	Kumari A. Malathy.
3. Sibthorpe First Prize	Surgery	Man Mohan Singh.
4. The Price Memorial Prize	Medicine	Mrs. Sushila Rajaġopalan.
5. The Chandrasekhar's Comrade Prize	Surgery	Man Mohan Singh.
6. The Allan Evan Grant Prize	Medicine	Man Mohan Singh.
7. The Bradfield Prize	Anatomy and Surgery	H. Srinivasan.
8. The George Smith Prize	Pathology	T. Dorairajan.
9. The Mc Nally Memorial Prize	Hygiene	Yathindranath Rai.
10. The Bannerman Prize	Bacteriology	Miss N. Sarada Devi.
11. The Dr. G. V. James First Prize	Principles and Practice of Surgery	M. Srinivasan.
12. The Dr. G. V. James Second Prize	Principles and Practice of Surgery	G. Radhakrishnamurthy.
13. The Mohiuddin Sheriff Memorial Prize	Pharmacology	K. K. Pokker.
14. The Dr. Samuel Jesudoss Prize	Pharmacology	M. Srinivasan.
15. The C. Raitt Dunhill Prize	Physiology	V. Narayani.
16. The Rajasekhara Reddy Prize	Anatomy	B. H. Gopinath Pai.
17. The Van Geyzel Prize	Organic Chemistry	G. Ramachandran.
18. The Dr. Thambiah's Prize	General Medicine & Diseases of Children	Mrs. Sushila Rajaġopalan.
19. The Dr. K. V. Bhat's Prize	Proficiency in Pathology & Hygiene	Yathindranath Rai.
20. The Dr. C. S. Govindapillai Prize	Best out-going Sanitary Inspector's class student	S. Muthuswamy.

List of Students who were Awarded Medals for the session 1951-'52

MEDALS

Name of Medal.	Subject.	Name of Winner.
1. The Chipperfield Gold Medal	Clinical Surgery	Mrs. Sushila Rajaġopalan.
2. The Bharata Lakshmi Gold Medal	Clinical Midwifery	Kumari A. Malathy.
3. The Rajah Sir Savalai Ramaswamy Mudaliar's Gold Medal	Clinical Midwifery & Diseases of Women & Children	Kumari A. Malathy.
4. The Savalai Sethuram Gold Medal	Diseases of Children	Mrs. Sushila Rajaġopalan.
5. The Lady Grant Duff Gold Medal	Best out-going Hindu Woman Student	Kumari A. Malathy.
6. The Rukmani Memorial Gold Medal	Ophthalmology	Yathindranath Rai.
7. The Dr. G. Rama Rao Gold Medal	Anatomy	Mahalinga Bhar.
8. The Johnstone Gold Medal	Best out-going Final year Student	Kumari A. Malathy.

Illusion

What this world to me denies
I reach for often in my dreams.
I listen mutely to the notes of Love
That race across my troubled mind
Like meteors in a mazy sky.

Rocklike, I stare above
Buried in dreams of that sweet voice,
That comes from nowhere,
Yet rings everywhere
Till it drowns in the low moan
Of the wandering western wind.

When the voice melts away
To bed in truant steps I falter
And dream of your solitary vision
Among the clouds, in the starlit sky,
Till I wake up to the din
Of another lifeless day.

—A. VARADARAJAN.

Sports Review

R. J. RAJASEKHAR,

Sports Secretary.

ALTHOUGH we have always had a reputation of being right, on top in sports activities I wondered whether we would continue to remain there. The end of the year proved, however, that in keeping with our slogan, "Medicos Never Die", we have managed fairly successfully in holding our own. Though we have not won many trophies, we have got very near to the top on most occasions and more encouraging are the unmistakable signs of promise of a more glorious future.

In Dr. Rajam, we had a president whose enthusiasm inspired us into original lines of action, whose encouragement was always there backing us in times of direst need and whose generosity was not governed merely by the petty limits of convention and previous custom. It is to his vision that we owe the transformation of the annual sports day from the squabble for personal trophies it was, to something which brings out the very essence of sport—playing the game and playing it for the team. His retirement has left a void which would be filled however by no less a person than Dr. Prasada Rao, our new Dean.

For the third year in succession, the charm of the emerald isle of Lanka proved irresistible to all of us but this year the contingent which flew over was novel in possessing a very interesting touch of colour in the form of the ladies' net ball team. The hockey and basket ball teams provided the necessary male escort. Combining business with pleasure very efficiently, the hockey and basket ball teams swept all before them. The ladies made up for their lack of success on the field by their charm off it. A modest estimate of their success, of course off the field, is the amount of publicity they received in the local press.

I should thank Dr. Sarada Menon in particular for helping me in those delicate problems which invariably arise where women are concerned.

FOOT BALL

It is unfortunate that we cannot compare ourselves very favourably with the teams of years gone by when Inter-Collegiate championship was practically synonymous with the name of the Medicos. We did not do as badly as we found at first and once we found our feet we did well enough to come to the final of the May and Baker Tournament. We were rather unlucky to lose to the formidable Pachaiyappa's team. We owe these fairly respectable performances to Madhavan who still forms the spearhead of our attack, ably assisted by Chandra, our representative in the Varsity team. Kailasam and Veluswamy form the sole relics of our once redoubtable defence and are always on the spot where things get hot. But for our custodian Subramanian we might have been considerably worse off. The first Wadi Memorial Match ended on a note of tragedy with the fracture of Dr. K. T. Mathew's leg. With the foundations of a fresh team being firmly laid and consolidated, the team ought to fare better this coming season.

BASKET BALL

This team had the unique, though not particularly fortunate, distinction of coming to all three Finals without winning any of them. It is rather difficult to figure out what sort of nemesis is shadowing them and let us hope that the new captain is lucky enough to get rid of the Jinx this year.

Jayakumar the skipper, was chosen as Vice-Captain of the Varsity Team having already represented the Varsity on three previous occasions.

We owe a great part of our success to our colts who have lived up to all the fond hopes we had placed in them. Ramaswamy in the totally unglamorous, unappreciated position of guard has prevented us from feeling the loss of our old stalwart Ganesan too acutely—Surendranath and Kingsley ought to develop into veritable pillars of the team in the future. With the passing out of ex-skipper Thyagarajan, we are sure to have difficulty in the strategy which plays such an important part in the game.

VOLLEY BALL

Though considerably neglected, this team has kept the college colours flying by winning the Inter-Collegiate and Inter-Zonal Knock-Out Tournament this year. This success is in no small measure due to the keen enthusiasm and brilliant organisation of skipper Viswanathan.

K. C. Mohamed's all round brilliance and Krupa Rao's service aces and subtle spiking have many a time pulled us out of the fire. This team of youngsters should continue to do very well if they maintain this enthusiasm and hard work this season also.

CRICKET

The College Cricket XI is a well-knit team. We qualified for the Zonal matches. S. V. Vaidyanathan skipper has led his team ably in every match and it comes as no surprise to us that he has been selected to lead the Varsity team also. The batting honours go to Wilson and Vaithy. Ashgar Ali, the right arm leg back spinner, has taken the most number of wickets for the team and it is a pity he has not been selected for the Varsity in spite of the grand form he showed. Kondal Rao the new-comer has filled the gap left by Jagesia and L. D. S. Mani very ably.

HOCKEY

Under the able leadership of C. J. Asirdas, the hockey team performed very creditably in all the collegiate matches and we were unlucky not to qualify for the Zonal Final. Sundararajan has the proud distinction of being the Varsity skipper and gave a brilliant account of himself in all the Inter-Varsity Matches. The passing out of Chandrasekhar, Belliappa and Freddie Santiago has left us wanting in experienced hands.

TENNIS

We cannot boast of any abilities in this game and in spite of that, we just failed to qualify for the Zonal semi-Final. Skipper Rao, that grand old man of the game, and Veeraraghavan were our mainstay and with the passing out of the latter we have been depleted of our already poor talent. I do not know where the fault lies, in us or in the ill-situated solitary court. Not even the close proximity of the ladies' playgrounds has helped to raise the low standard.

THROWBALL & TENNIKAIT

We met with rather fluctuating fortunes in this sphere of ladies' sport, in spite of the best efforts of Savitri Mardi and her colleagues. Perhaps this was because of the lack of sufficient number of freshers to reinforce the old guard. Hope the present first years will help us to do a little better.

ATHLETICS

The inception of the Dr. R. V. Rajam shield for the winners of the Inter-Class Championship has added a note of enthusiasm not noticed for some years past. All the events were keenly contested and both men and women displayed a zeal hitherto unknown. The large lead set up by the IV years served them in very good stead and they were very lucky to ward off the powerful challenge of the III year team. Congratulations IV years. B. S. Wilson won the championship for Men's Events and Savitri Mardi for the Women's Events. Samuel Devaraj did not do as well as he could have but perhaps will do better next year. I would like people to realise that this is the field of greatest opportunity where no particular talents are essential and where everyone can, if he or she takes sufficient trouble, do really well.

I take this opportunity to request the new-comers who are proficient in any game, and even those who would like to have a try, to contact the authorities concerned without waiting to be "discovered". We Medicos have always displayed a terrific amount of Camaraderie and Esprit de Corps as they call it. We have always played together and won together and when we have lost, we have always gone down together. It is this same spirit that has always helped us to come up fighting again. This remarkable quality, not very clearly definable but at the same time the very soul of our existence, is dwindling considerably of late and it is up to us to see that it is not lost altogether.

During my tenure of office, I have endeavoured to maintain these glorious traditions we should be proud of. If I have been at all successful it is entirely due to the wholehearted co-operation and unstinted support of my colleagues, the captains of various teams, the Physical Director and the members of staff on the committee.

My parting words to my successor will be best served by.

GOOD LUCK AND FARE THEE WELL.

—★—

MARK THE WORDS OF MARK TWAIN—

I have never let my schooling interfere with my education.

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We can easily endure adversity—another man's, I mean.

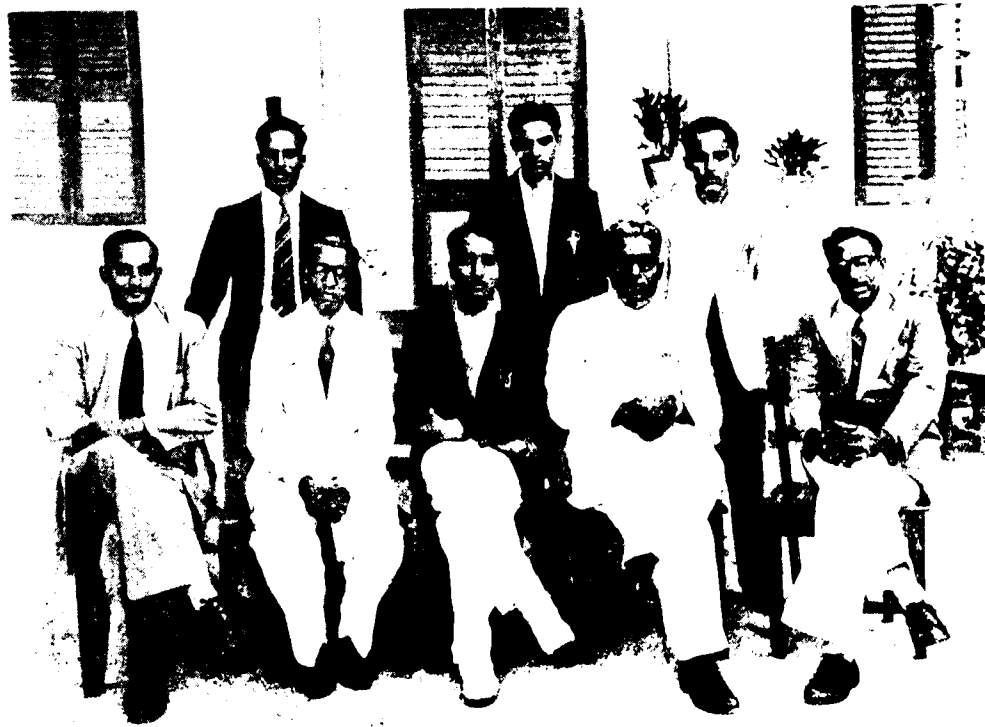
THE SPORTS COMMITTEE 1951-52



Sitting (L. to R.)—Mr. Swaminadhan, (Phys. Director),
Dr. Manjunath Rai, (Treasurer),
R. J. Rajasekhar, (Sports Secretary),
Dr. Babu Naidu, (Staff Rep.),
Miss K. Savithri Mardi, (Ladies Rep.),
Dr. Jacob, (Vice-President),
Dr. V. P. Naidu, (Staff Rep.).

Standing (L. to R.)—Visvanathan, (Volley Ball),
C. J. Asirdas, (Hockey),
Jayakumar, (Basket Ball),
B. S. Wilson, (Athletics).

Top Row—Veluswami, (Foot Ball).



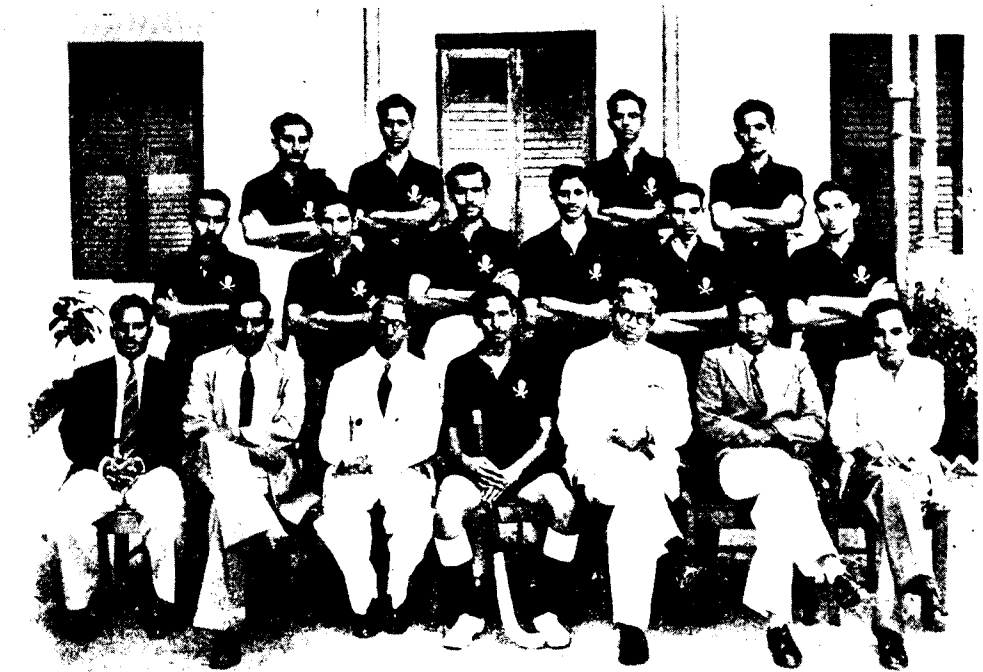
TENNIS



FOOT-BALL



VOLLEY BALL



BASKET BALL

THE MADRAS MEDICAL COLLEGE STUDENTS'
CLINICAL SOCIETY 1952



Sitting L. to R. — Miss Ila Rodrigues, Asst. Secretary, Dr. G. Victor, M.D., President, Lt.-Col. C. K. Prasada Rao, M.D., Dean,
Mr. S. Krishnamoorthy, B.A., Secretary.

Standing L. to R. — Miss A. C. T. Thankam, P.V., Mr. M. Han Das, Treasurer, Mr. G. Arjun Das, Mr. W. D. Netto,
Miss V. Ramanamma.

Scientific Attitude

If you want to know the essence of the Scientific method, do not listen to what the scientist has got to say but watch what he does.

—Einstein.

* * *

Curiosity is a necessity of our nature, a blind impulse that obeys no rule. Our mind turns around all external objects and penetrates within the depths of ourselves, as instinctively and as irresistibly as a racoon explores, with its clever little paws, the slightest details of its narrow world. Curiosity impels us to discover the universe. It inexorably draws us in its train to unknown countries. And unclimbable mountains vanish before it like smoke before the wind.

—Alexis Carrell.

* * *

What the experimenter is really trying to do is to learn whether facts can be established which will be recognised as facts by others and which will support some theory that in imagination he has projected. But he must be ingenuously honest. He must face facts as they arise in the course of experimental procedure, whether they are favourable to his idea or not. In doing this, he must be ready to surrender his theory at any time if the facts are adverse to it. The tragedy of scientific enquiry, as Huxley once remarked, is "The slaying of a beautiful hypothesis by an ugly fact".

—W. B. Cannon.

* * *

Science is nothing but trained and organised Commonsense differing from the latter only as a veteran may differ from a raw recruit.

—T. H. Huxley.

Current Literature

Surgery: Dr. A. VENUGOPAL, M.S.

THE DEVELOPMENT OF SURGERY FOR CANCER OF THE COLON.

Arthur W. Allen, *Annals of Surgery*, 1951, 134: 785.

The first portion of this article is devoted to a history of the surgical management of cancer of the colon. Surgical intervention for cancer of the colon started in 1710 at which time proximal decompression by direct incision was performed. In 1833, resection of the colon for cancer was successfully carried out. Exteriorization was first reported in 1892. During the two decades between 1920 and 1940, a reasonably sound approach to the problem of carcinoma of the colon was developed. There is general agreement on certain basic principles:

1. Gross soiling of the peritoneal cavity must be avoided;
2. Union of the bowel ends must have an adequate blood supply;
3. Deficiencies in nutrition, haemoglobin, electrolyte, and blood volume must be corrected.
4. The Influence of chemotherapy and antibiotics must be fully realised which is responsible for the decline in mortality and morbidity figures during the last decade. Although these agents are not substitutes for meticulous surgical care, they have been most worthwhile adjuncts.

The latter half of the article is concerned with the detailed management of the cancer of the colon. The preoperative preparation of the patient is very important in these cases. The blood picture, the blood chemistry and the cardiovascular system are carefully checked up before submitting the patient to operation. Barium enema to establish the location of the lesion and the presence or absence of polyps should all be determined. Sigmoidoscopy examination is routine. In acute obstruction of the large bowel, proximal decompression is advised. In tumours of the right colon, deflation of the abdomen with a large double lumen tube (Miller Abbot's tube) may be possible. Usually, an ileotransverse colostomy in continuity by an aseptic technique is preferred. Caecostomy or transverse colostomy is used for lesions which are completely obstructing beyond the midtransverse colon.

Excision of the colon itself may have to be delayed from 10 days to 3 weeks depending upon the general condition of the patient. Patients are given 8 gms. of sulphathaladine daily for 5 to 7 days preoperatively. Streptomycin, 5 gm. is given twice daily for 48 hours prior to operation. Blood volume is replenished by blood transfusions and the Haemoglobin content of blood is raised to the safe operative level. Pyelograms may have to be done in some cases to find out if there is any involvement of the genito-urinary tract. On the morning of operation, an intragastric tube is introduced. Surgical approach varies in different cases.

Usually a long right paramedian or left paramedian incision is satisfactory. After the colon is detached from its lateral attachments and the amount to be sacrificed is determined, the bowel is divided proximal to the tumour. A complete nodal dissection may also have to be done in some cases. A meticulous open anastomosis is performed. No drainage tubes are introduced unless frank pus has been encountered. The peritoneum and fascia are closed; sub-cutaneous tissue and skin are allowed to remain open. Heavy silk sutures are placed through the sub-cutaneous tissue and skin and tied over a gauze roll placed in the wound. After 48 hours, this roll is removed and the silk sutures are tied approximating the wound edges. By this method, wound infection is reduced to 1%.

Passive and active exercise of the legs and arms are encouraged during the postoperative period. Streptomycin and penicillin are given routinely. The author has operated on 205 patients with cancer of the colon during the years 1943 to 1950, at the Massachusetts General Hospital, Boston. In 95 per cent of these patients, the tumour was resectable and the resection mortality was 2.6%. Between 1940 and 1944, the 5 year salvage in 103 cases was 44.4 per cent. Palliative resection was performed in 29 cases with an average survival of 9.8 months.

DISEASES OF PROSTATE AND BLADDER: PRESENT DAY MANAGEMENT.

By William J. Baker, *Surg. Clin. N. America*, 1952, P. 299.

This article outlines the management of the most common diseases of the prostate gland and bladder. In the management of an enlarged prostate, the general trend is to remove completely large benign prostate glands by an open surgical procedure. Suprapubic prostatectomy is the treatment of choice in patients who are good risks. Perineal prostatectomy, much favoured in America, produces less shock and haemorrhage and affords longer life to patients who are considered poor risks. Transurethral prostatectomies are favoured by many urologists who are particularly adept with resectoscope. Every patient deserves attention to the factors of haemorrhage and its control. The bleeding and coagulation times must be determined first. Gelfoam has been of great assistance to the surgeon. Bilateral vasectomy is recommended for all men above the age of 60. It is pointed out that the incidence of epididymitis is about 30 per cent after operations for prostatism if bilateral vasectomy is not performed. The anaesthesia used by these surgeons is intravenous pentothal and nitrous oxide inhalation. In very poor risk cases, caudal anaesthesia should be used. During transurethral resection, care should be taken to prevent over-hydration, since a lot of irrigating fluid can be absorbed through the open prostatic bed. Blood transfusions are routinely advised for all poor risk patients. During transurethral resection, it is desirable to take out too little tissue than too much tissue. If the functional result is only fair, after the first transverse urethral resection, it is easy to perform a second resection for further removal of the obstructing tissue.

The two big problems for the genito-urinary surgeon are urethral strictures and infected urine. Strictures are managed by the periodic passage of catheters and sounds, and the prophylactic use of antibiotics. The blood chemistry and renal function should be determined preoperatively and if the residual urine is more than 4 ounces, an indwelling catheter may be necessary. If the indwelling catheter does not give the desired result, a cystostomy has to be done. The use of routine cystoscopy and examination of the upper urinary tract prior to operation on the prostate gland are recommended.

The diagnosis of cancer of the prostate should always be confirmed by positive tissue examination. The ideal scheme of treatment for a patient whose prostatic cancer cannot be managed by radical perineal prostatectomy is by transurethral resection so that there may be no obstruction to the onward passage of urine. This may be followed by bilateral castration, administration of adequate estrogens and a course of deep X-ray therapy.

Papillary tumours of the bladder will be treated with transurethral coagulation and fulguration. Segmental resection of the bladder remains a valuable procedure for some tumours. Other large bladder tumours require cystectomy. Ureterosigmoidostomy should be performed prior to cystectomy. Although the ureters may be implanted in the bowel at the same time that the bladder is removed, a two-stage procedure is recommended. Dermal ureterostomy is a valuable procedure in the patient whose bladder tumour is inoperable, and whose symptoms are almost unendurable.

Streptomycin does not cure tuberculous lesions of the urinary tract but controls them and makes them amenable to surgical removal. It is given daily, 1 gram being given for 90 to 120 days before a kidney or epididymis is removed. It is also required 30 days after operation.

CARCINOMA OF THE BLADDER: AN EVALUATION OF TOTAL CYSTECTOMY AND OTHER METHODS OF TREATMENT.

Fletcher H. Colby and Walter S. Kerr, Jr. *N. England Medical Journal*, 1951, 244: 504.

A concise and clear-cut evaluation of the long term results of total cystectomy is presented by the authors and a significant comparison has been made between total cystectomy and other less formidable procedures in the treatment of carcinoma of the bladder. From 1934 to '50, a total of 103 cystectomies for carcinoma of the bladder were performed at the Massachusetts General Hospital, Boston. During the same period, a total of 700 patients with carcinoma of the bladder were treated at this institution with all forms of therapy. In reviewing the microscopic characteristics of these neoplasms, it is suggested that penetration into the bladder muscles may have more significance than the size or location of the tumour, no matter whether it was papillary or non-papillary.

Carcinoma of the bladder was treated by various methods such as total cystectomy, segmental resection, fulguration and electroresection and presented a 10 per cent 5 year survival rate when the muscle was invaded. There was a 66 per cent survival rate over a 5 year period when no invasion of the muscle was demonstrated. When either electro-resection or segmental resection was used exclusively, the 5 year survival rate increased to 11 per cent when the muscle was invaded and to 100 per cent when no invasion was demonstrated. Total cystectomy as an exclusive form of therapy resulted in an 8 per cent 5 year survival with muscle invasion and a 16 per cent

5 year survival without muscle invasion of the bladder. Segmental resection or local destruction obviously was not sufficient to control most of the tumour which had invaded the muscle. However, when the bladder muscle was not invaded, these measures were adequate. Many of the deaths following total cystectomy were the result of operation because of the altered blood chemistry, infection and failing renal function with uremia. A few deaths were due to cerebral accident and uncertain causes. As far as can be determined, no patient whose tumour did not invade the muscle died of cancer.

Invasion of the underlying muscle therefore in a bladder tumour implies a poor prognosis. When total cystectomy was used for tumours that did not invade the muscle, the 5 year rate was considerably lower than when other methods were used. 16 per cent and 100 per cent respectively. Since there was no evidence of patients without invasion of the muscle dying of cancer after cystectomy, it must be assumed that they died from the effects of the operation itself. Tumours that did not invade the muscle appeared to be well localized and did not spread to the regional lymph nodes so far as could be determined. 40 per cent of the tumours that did invade the muscle involved the regional lymph nodes with neoplastic tissue. Therefore, if the muscle is invaded by tumour, the regional lymph nodes should be removed, if possible, regardless of the method used to remove the primary tumour.

PAROTID GLAND TUMOURS.

T. Howard Clarke, *Surge. Clin. N. America*, 1952, p. 175.

Tumours of the parotid gland are divided into two classifications in this article: primary tumours and metastatic tumours. Most primary tumours are of epithelial origin. The most common of the benign tumours are the mixed tumours. It is pointed out that these tumours occupy an intermediate position between benign and malignant growths. Primary malignant tumours comprise one fourth of all parotid tumours and range from the relatively benign cylindromas to the highly malignant anaplastic cellular carcinomas. Metastatic tumours of the parotid gland occur occasionally. Infrequently, Hodgkin's disease and Boeck's sarcoid are found in the parotid.

In this article, there are a number of drawings which show the variable distribution of the facial nerve and it is pointed out that the facial nerve does not pass through the substance of the parotid but passes from the region of the styloid process at first posterior and then superficial to the deep lobe of the parotid. During the dissection, the nerve will be displayed throughout its course between the superficial and deep parotid lobes.

Aspiration of the parotid gland for diagnosis seems to be notoriously unreliable and therefore aspiration as a diagnostic aid is not recommended. Sialography is also used. Adequate surgery is the proper method of treating tumours of the salivary gland. Techniques for simple parotidectomy, deep lobectomy, radical excision of the parotid gland and ligation of the external carotid artery are given. Emphasis is placed on the fact that the facial nerve should be exposed by first identifying one of its peripheral branches and, pursuing the dissection backward to the main trunk. Ligation of the external carotid artery is a very simple procedure. When a difficult operation on the parotid is anticipated, it is desirable to perform a preliminary ligation of the external carotid artery. This is done at the same time that the parotid surgery is performed.

Radiation therapy is useless in the management of primary mixed tumours. However, radiation therapy can be given to all patients with cancer of the parotid gland regardless of the histologic type. Therapy is started 5 to 10 days after complete surgical excision of the tumour with radical neck dissection.

The most important surgical complications after a parotid tumour excision are facial nerve injury and salivary fistula. Complications of irradiation are dry mouth and sometimes skin necrosis. Radiation therapy is suggested for the treatment of salivary fistulas. Benign parotid tumours may be treated by superficial parotid lobectomy or total parotidectomy with preservation of the facial nerve. Malignant parotid tumours are cured only if the entire primary tumour and its secondary deposits are removed. Radical neck dissection followed by radiation therapy is indicated.

BRANCHIAL CYSTS AND FISTULAS.

Cornelius E. Sedgwick and Joseph F. Walsh, *Am. J. Surg.* 1952, 83: 3.

A study of 75 cases is reported from the Lahey Clinic, Boston, Massachusetts. Branchial fistulas were seen in 6 males and in 10 females. The sinus opening in these patients was noticed first at ages varying from the day of birth to 15 years. The average age at which these patients were examined was 18 years. Four fistulas were bilateral. Eight sinuses were situated anterior to the sternocleidomastoid muscle in the lower third of the neck. Eight more were in the middle third of the neck and one sinus was situated in the upper third of the neck. Two sinuses were situated in the suprasternal notch and one sinus was below the manubrium. All these patients noticed pain and 6 patients had incisions to relieve painful obstruction. Pathological examination of the sinus tract showed that it was lined with stratified squamous-cell epithelium.

The operative procedure has been described in detail in this article. The entire tract should be excised from the external skin opening to the entrance of the sinus into the pharyngeal wall. If the external orifice is in the lower third of the neck, transverse multiple incisions should be used for a complete dissection of this tract right up to the pharyngeal wall. A primary elliptical incision is made around the orifice of the tract and, as dissection proceeds upwards beneath the sternocleidomastoid muscle, a second higher incision is made to facilitate dissection of the upper portion of the tract. Complications of the operative procedure were noticed in only one patient where a paralysis of the left vocal cord occurred.

Branchial cysts were seen in 22 males and 37 females. The most common position of these cysts was anterior to the sternocleidomastoid muscle in the upper third of the neck. In 56 of these cases, the cysts were lined with epithelium, stratified squamous and columnar. Following surgery, 2 patients had partial hypoglossal paralysis, 2 had serious drainage, one had recurrent swelling for a period of two years. This article by these two authors gives a complete picture as to the pathology, symptomatology and treatment of this condition.

TERRAMYCIN IN THE TREATMENT OF PERITONITIS.

Eric Reiss, Edwin J. Pulaski, C. P. Artz and Joseph R. Shaeffer, *Arch. Surg.* 1952, 64: 5.

68 patients with peritonitis were treated with Terramycin by these authors. 28 of the patients had peritonitis of appendical origin. The remaining 19 patients had pelvic inflammatory disease, gangrene of the bowel, perforated peptic ulcer, perforated

carcinoma of the colon, perforated sigmoid diverticulum and perforating gun shot wounds. Terramycin was the antibiotic employed in 31 patients. The remaining patients had received penicillin and streptomycin for an average of 5 days. The ages of these patients varied from 20 to 78 years. 1 gm. Terramycin intravenously every 12 hours for 2 to 4 days, followed by $\frac{1}{2}$ gm. orally every 6 hours for a period of 8 to 10 days was used.

Among the 32 patients with spreading peritonitis, results were excellent in 17, good in 8 and unsatisfactory in one. Of the 12 patients with localised peritonitis, 3 showed an excellent response, the results were good in 5, doubtful in 4. Five of the six patients with pelvic inflammatory disease in whom penicillin and streptomycin therapy had failed showed a satisfactory response to Terramycin. Two patients had a little nausea and vomiting. One patient had a slight phlebitis at the site of injection.

These authors feel that a combination of penicillin and streptomycin has real merit but Terramycin, like Aureomycin, is suggested as a singularly effective antibiotic in the treatment of peritonitis and they feel that a good result can frequently be obtained with this drug when penicillin and streptomycin have failed.

THE SURGICAL TREATMENT OF INTRACTABLE

PLANTAR WARTS:

Hans May *Surge. Clinics of North America*, 1951, 31: 607.

Plantar warts originate as small papillomas beneath the dermis of the sole of the foot and are painful at the very beginning. A virus infection has been demonstrated as the cause of warts and it appears that it may be spread by contact while walking barefooted. They may be single but occasionally, they may spread and become multiple.

The vast majority of small warts can be treated successfully by electro-coagulation, electro-desiccation, freezing, application of caustics, simple excision and irradiation. The latter seems to be the most successful treatment. Occasionally a wart persists and forms a stubborn ulcer. The ulcer usually forms over the metatarsal heads which may become exposed. The patient has severe pain on walking.

The surgical treatment of these intractable plantar warts consists of wide excision of the wart and all surrounding cicatricial tissues regardless of the size and depth of the defect. A thick skin graft may rarely be considered and then only for shallow lesions with sufficient sub-cutaneous padding still left.

The author has treated 12 patients for intractable plantar warts, 2 of which were bilateral and 10 unilateral. In all but three, the wart was excised widely and the defect covered with a cross leg flap. In all of these patients the flap remained stable and there was no reactivation of the wart. In another patient a sliding flap from the dorsum of the foot was used followed by skin grafting of the resultant secondary defect at the dorsum. In general, it would appear that the primary essential of therapy is the adequate removal of the wart and the provision of a painless walking surface.

Pathology: Dr. Miss. ANGULI, B.Sc., M.B. B.S.

BANTI'S DISEASE AND SPLENIC ANAEMIA.

Sir. Henry Tidy, *B. M. J.* 1952—July 5—1.

Banti's disease has been generally described in text books as a chronic disease with an insidious onset, characterised by splenomegaly, hypochromic anaemia, leucopenia, recurrent haematemesis and in some cases terminating in cirrhosis of the liver with ascitis. Splenic anaemia has been described as a syndrome of splenomegaly and anaemia in adults. There is no agreement on whether Banti's and Splenic anaemia are one disease or two. The names are familiar with aetiology still obscure. From the study of his cases, the author feels that disease process is the result of maternal rhesus iso-immunisation with damage to the infant's spleen, liver and bone marrow by the circulating antibody. The hepatic cirrhosis, the splenomegaly and the blood changes develop independently of each other right from birth, the aetiological factor being rhesus incompatibility in the parents and action of the Rh agglutinins in the foetus. In other words, the disease is the continuing stage of Erthroblastosis foetalis in survivors. Splenectomy appears to have no beneficial result in these cases.

INFECTIVE HEPATITIS.

Sir John Mc Nee, *B. M. J.* June 28, 1952—1.

Sir John Mc Nee's lecture provides a useful summary of the growth of our knowledge of viral hepatitis. The disease is spread by infected droplets among close contacts. The experiments on transmission to human volunteers show that the infecting agent is much more readily recoverable from the faeces than from nasal washings. The association of epidemics with the presence of large numbers of flies supports the view of faecal contamination as the mode of spread.

Sir Mc Nee suggests that the acute inf. hepatitis, the old catarrhal jaundice with a long history and the homologous serum jaundice with only a short history are one and the same disease, in spite of the fairly dear cut difference in their incubation periods—60 to 120 days—and 20—35 days respectively. He adheres strongly to the view that there is only one hepatic virus and this is supported by the close similarity of the clinical picture and the histology of the affected liver in both diseases.

Sir Mc Nee suggests that the ordinary infective hepatitis virus, already spread through the community, especially in children for a number of years may become attenuated in blood stream becoming the 'icterogenic agent of homologous serum jaundice in the blood'.

HYDROCEPHALUS IN INFANTS AND CHILDREN.

R. Nigam, *I. J. S.* 1952—Vol. XIV—134.

The author presents a review of anatomical physiological and pathological facts of the disease in addition to the Clinical aspects and treatment of the condition. Besides, he has given a brief abstract of his experimental work on the production of hydrocephalus.

Nearly 4/5ths of the C. S. F. is formed by the choroid plexus of the lateral ventricles by the process of selective activity over substances that are to be filtered through into the C. S. F. The fluid passes to the third ventricle via the foramina of Monro, and to the fourth ventricle via the aqueduct of Sylvius. The paired foramina of Luschka and the single median foramen of Magendie give exit into the subarachnoid space comprising of a number of dilated cisterns. Absorption into the venous sinuses occur by a process of osmosis and filtration through the arachnoid-villi.

Theoretically hydrocephalus can be caused by over production of C. S. F., obstruction to C. S. F. Pathways and lack of absorption of C. S. F. The first is seen rarely clinically while the second is the commonest cause found. Regarding the third, another uncommon entity, one can surmise either congenital absence or obliteration of the arach-Villi due to inflammation. It is known that thrombosis extending into the superior long-sinus—secondary to otitis leads to diminished absorption of C. S. F. and may sometimes cause hydrocephalus.

The author classifies the types of hydrocephalus as follows:

1. Ventricular Hydrocephalus—the site of obstruction at Foramen Monro or Aqueduct of Sylvius or Roof of the 4th ventricle.
2. Extra Ventricular type—obstruction being in the sub arachnoid space.
3. External hydrocephalus—rarely seen as a primarily condition—the cause being an atrophy of the brain. The author has given the pathological classification as adopted by Dorothy Russel. She has referred to the following groups:
 - (a) Maldevelopments:—(1) Aqueduct of sylvius—atresia stenosis etc.
 - (2) Foramina of Magendie and Luschka obliteration.
 - (3) Spina bifida with the associated meningocele and Arnold chiari malformation.
 - (4) Deformities of the skull base.
- (b) Inflammations—This is the common cause and comprises of the following and varieties.
 - (1) Exogenous particulate matter.
 - (2) Infection—Nonbacterial and bacterial—Meningitis.
 - (3) Granulomatous infections like tuberculosis and syphilis.
- (c) Dural sinus thrombosis (of otogenous origin).
- (d) Neoplasms of the posterior fossa—are the frequent causes of hydrocephalus in adults.

Hydrocephalus may exert generalised pressure on the pituitary gland producing the various endocrine disorders like Frohlich's syndrome, precocious puberty, acromegaly etc. Erosion of the skull is well known and there may be general atrophy of the brain.

The author was able to produce hydrocephalus in adult white rats with intracisternal injection of 0.2–0.4 cc. of a 20% suspension of Indian ink. An obstruction in the out flow of C. S. F. somewhere in its normal pathway appears to be the fundamental cause of hydrocephalus. The author feels that the disease is mostly of developmental origin since there is no etiological factor forthcoming in the Majority of the cases in his series.

PRIMARY CARCINOMA OF THE DUODENUM

B. J. S. (1952) Vol. XL—No. 159.

There are three different articles in the above number reporting cases of Primary Carcinoma of the Duodenum with a brief review of literature of the condition. It is the general impression that Primary Carcinoma of the duodenum is an exceedingly rare lesion. From a survey of the literature, the disease is said to account for 0.3% of gastro intestinal carcinomata. From the large series of cases accumulated it seems that the carcinoma of the duodenum is not so rare as it was formerly supposed and still taught to be.

Duodenal growths have been classified according to their relation to the papilla of Vater—supra papillary, peri and infra papillary. There has been enough evidence brought forward to show that a number of peripapillary carcinomata are in fact growths of the duodenum and not the common Bile duct as had been suggested previously. Third part of the duodenum remains as one of the rare situation in which carcinoma occurs. Jefferson's remark that "inch for inch the duodenum is more likely to undergo cancerous change than jejunum and ileum" appears to be confirmed by the statistical figures given.

The main symptom has been vomiting in all these cases—occurring at intervals of a few hours; the vomitus normally being profuse and containing bile and altered blood. The radiological evidence of neoplastic filling defect may be over looked since this part of the alimentary tract may not ordinarily be carefully examined.

The growths may be proliferative or ulcerative. Histologically they are adenocarcinomata.

LYMPH NODE ASPIRATION.

Maurice Morrison, A. A. Samwick, Joshua Rubinstein, Melvin Stich and Leo Loewe.

Am. J. of Clinical Pathology (1952) Vol. 22—255.

Progress has been made in the recent years in developing methods for the diagnosis of a number of lymph nodal diseases associated with blood dyscrasias. It is well known that no definite diagnosis can be made on haematological findings in Hodgkin's disease, lymphosarcoma, secondary carcinomatous infiltration etc. of the lymph node. Most often, the diagnosis rests upon a biopsy and at times on necropsy.

Lymph node aspiration appears an important adjunct to the study of lymph adenopathies from the encouraging report given by the authors—being based on their experiences in 101 patients with biopsy tissue aspirated from lymph nodes. Lymph node aspiration is a simple procedure—the apparatus required being a 20 gauge needle, a dry syringe and an alcohol sponge. No anaesthesia is required. A smear of the aspirate is made on a clean slide for staining with Wright's stain.

A description of the characteristic findings in tissue aspirated from lymph node with criteria for the diagnosis is given. The authors predict that lymph node aspiration will prove of great value in replacing or supplementing surgical biopsy in the haematologic study of lymphadenopathies just like the indispensable bone marrow puncture in haematology.

In conclusion, the cytological study of lymph node aspiration is only meant to be adjunct and not a substitute for histological study. Perhaps, it might be easier

to coax a patient to have an aspiration than to submit himself to the conventional surgical removal of a lymph node. Being a simple procedure, it can be often repeated for subsequent study or in determining the effect of treatment.

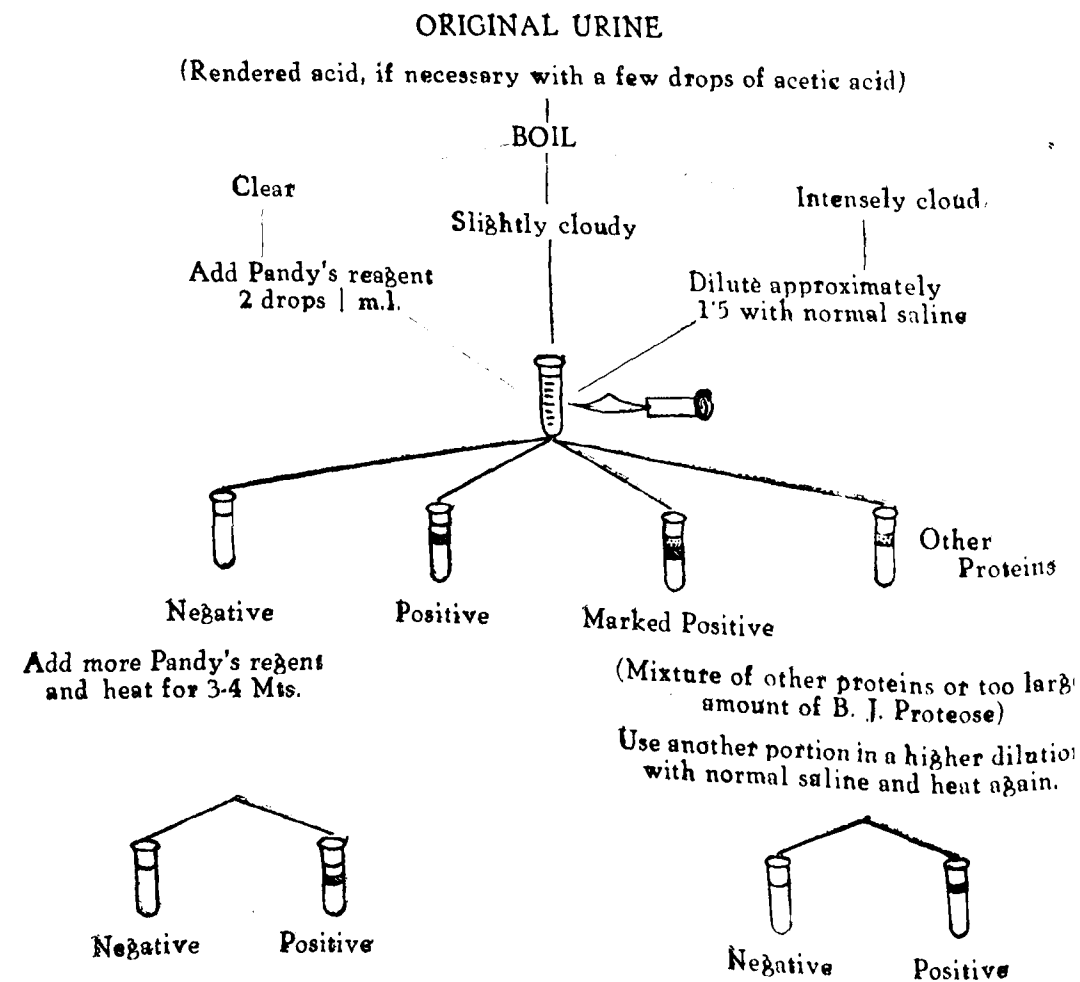
A SIMPLE AND SENSITIVE TEST FOR BENCE JONES PROTEIN

Am. J. Cl. Pathology 1952 Vol. 22—282.

STEFAN SANDKUHLER

A simple ring test for Bence Jones Protein (BJP) in urine is described. The test has been found positive in 24 of 26 consecutive cases of multiple myeloma. The disease was in an early stage in the other two cases.

Method: The following is the outline of procedure for ring test for Bence Jones Protein.



The test tube is $\frac{1}{4}$ ths filled with urine. The tube is held upright and heated with a sharp flame. The Bunsen burner held in a horizontal position. The test tube is grasped at the bottom and is rotated gently between the fingers. Flame is applied about the middle layer. The heating is carried out carefully so that the top of the liquid does not boil. Shaking is avoided. With this sensitive test it is hoped the old tendency to establish the diagnosis of Multiple myeloma on the basis of finding this abnormal protein in the urine could be revived.

TECHNICAL SECTION

Laboratory diagnosis of Amoebiasis—Clyde Swartzwelder, *Am. J. of Cl. Pathology* 1952-22-379.

The simple fundamentals upon which a correct laboratory diagnosis of amoebiasis is based is reviewed in this symposium on parasitology. A detailed laboratory procedure in the diagnosis of amoebiasis is given with emphasis on elementary facts and steps to attain good technic in the preparation of the smears, staining etc.

The clinical diagnosis of intestinal amoebiasis is not difficult to confirm by laboratory technics. Specific diagnosis depends upon demonstration of either cysts or vegetative forms of E. H. The following are the procedures designed by the author in the diagnosis of intestinal amoebiasis.

I. Stool Examination.

- A. Three or more fresh stool specimens.
 - (1) Direct smear in saline and in iodine for Vegetative forms and cysts.
 - (2) Zinc sulphate centrifugal flotation for cysts.

B. Fresh warm stool specimen after saline purgative.

II. Sigmoidoscopic examination.

- A. Visual examination for lesions.
- B. Aspiration of material for microscopic study. (The author recommends a heavy walled smooth tipped glass tube with a heavy rubber bulb attached at one end for aspiration—instead of a cotton swab).

III. Culture of stools and aspirate on a suitable medium.

IV. The entire procedure should be completed before the diagnosis of amoebiasis is excluded.

The following is a compilation of a few statements to dispel some erroneous ideas concerning the lab. diagnosis of amoebiasis.

Eosinophila is not observed in amoebiasis. In positive cases, usually the vegetative forms rather than cysts are observed in sigmoidoscopic aspirates. Saline and iodine stained smears would be sufficient in most instances for a specific diagnosis. The vegetative form need not contain ingested R. B. C.'s to establish. Chromatoidals are visible in unstained smears or in iron haematoxylin smears.

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Medicine : Dr. P. VASUDEVA RAO, M.D.

A. C. T. H. AND CORTISONE.

B. M. J. June 14, 1952.

Following the first flush of enthusiasm, a wave of disappointment has spread through many of the more recent reports of therapy in Collagen diseases. Hench himself was the first to give a warning that suppression and not cure of the disease was all that could be expected. Dramatic remissions have been brought about by the use of these drugs only to be followed by almost equally severe relapses when they were stopped.

Acute Rheumatism and Rheumatic Carditis: The results of the trial of these drugs by Dr. E. N. Chamberlain et al in acute rheumatism are most discouraging. Some improvement in general state of health, quick control of arthritis and beneficial effect on "minor" manifestations, viz., temperature, pulse, E.S.R., has been the general experience of many, whereas nodules, rash and chorea remain uninfluenced. The most hopeful approach is the use of these drugs at the onset of the first attack in an attempt to prevent cardiac complications or during a relapse of carditis to tide the patient over the most acute period. *B. M. J.* May 31, 1952.

Infective Hepatitis: 9 cases of hepatitis, all severely ill despite modern therapy, were treated with aqueous and oily extracts of adrenal cortex. Recovery in all was dramatic and none had any signs of liver dysfunction when examined a year later. It is difficult, however, to assess the value of a new treatment in a disease so unpredictable in its course as infective hepatitis. In view of what is known of the effects of ACTH and Cortisone upon protein, fat and carbohydrate metabolism and especially of the ease with which fatty infiltration of liver is induced it is both surprising and gratifying that no adverse effects result from their use in hepatitis. *B. M. J.* April, 19, 1952.

Water House-Friderichsen Syndrome: Fulminating meningococcal infection, clinically unique in that no other infection kills so consistently and so quickly—death sometimes occurring in 12 hours and commonly within 24 hours. Nelson et al report two cases in which Cortisone appeared to be strikingly effective by abolishing cyanosis, reversing the fall in B.P. and restoring secretion of urine, thus clearing the field for effective chemotherapy. G. E. Breen et al (*Lancet* 7th June 1952) report two more cases treated with cortisone.

Agranulocytosis: Amidopyrine still remains one of the common causes of acute drug-induced agranulocytosis. Dudley Hart et al report a case of agranulocytosis due to amidopyrine wherein ACTH produced rapid improvement in the clinical and haematological picture beginning on the third day of treatment and complete in 3 weeks. There have been two other cases reported to date with similar results.

DARAPRIM IN MALARIA.

B. M. J. April 5, 1952.

During 1949–1950 a large series of substituted 2:4 diaminopyrimidines were synthesised by Folco et al. The most powerful schizonticides of the series proved to be 2:4 diamino 5: P chlorophenyl, 6 ethylpyrimidine, now known as "Daraprim".

A single dose of 0.5 mgm. K. G. body weight causes the disappearance of sexual forms of *P. falciparum* and *P. Malaria* from the blood in quite the majority of cases. Daraprim promises to be a valuable antimalarial drug. Its small effective dosage and tasteless character may well make it the drug of choice in the treatment of malaria.

MYSOLINE NEW DRUG FOR EPILEPSY.

Lancet, April 12, 1952.

Mysoline, a new anti-convulsant drug is closely related to phenobarbitone. Practically tasteless, chemically stable and sparingly soluble in water, it has an extremely low toxicity and has no hypnotic action in therapeutic doses. Handley et al report result of trial in 40 cases with Major epilepsy. Doses upto 1.6 g.m. daily produced no serious side effects or sleepiness. Attacks were reduced in 80% and completely stopped in 20% of the cases.

ISONICOTINIC ACID HYDRAZIDE.

B. M. J. 19, April, 1952, *Lancet*, April 5, 1952.

Two drugs, which are derivatives of Nicotinic acid, have been found to exert a remarkable effect in tuberculosis. They are (1) Isonicotinic acid hydrazide and (2) 1-Isonicotinyl 2. Isopropyl hydrazine. The immediate effect of treatment was dramatic—fever subsided, temperature almost always reaching normal in 10 days; sense of well being, and voracious appetite with rapid weight gain resulted. Diminution in cough and sputum and in the number of bacilli in sputum regularly began in second week. Improvement in X-ray appearances included apparent closure of single or even multiple cavities. It is true that many questions relating to this treatment are yet to be answered, in particular, those of its long term effects. No serious toxic effects have been observed.

This drug is almost completely absorbed from the digestive tract and excreted largely in the urine. Dosage recommended is 3.5 mgm/kg. orally. This does is exceeded only with caution.

Toxic Symptoms: The symptomatology was largely related to the autonomic nervous system and consisted of sympathetic stimulation, constipation, bladder sphincter disturbances and dryness of mouth. Vertigo and transitory fall in B. P. were noted in some. The central nervous system was also stimulated as shown by hyperactive reflexes, involuntary twitchings, insomnia and drowsiness. No cases of severe toxic reactions were noticed in therapeutic dosage (*Indian Journal of Medical Science* July 1952) Toxic effect on liver has been noticed in experimental animals.

PRISCOL IN RELIEF OF ACUTE LEFT VENTRICULAR FAILURE.

(David Wheatley) *B. M. J.* May 31, 1952.

Intense peripheral vasoconstriction constitutes an integral part of the pathogenesis of the condition (Wood 1950). This vasoconstriction results in the sudden rise in B. P. which precedes the attacks. To this, in turn, may be attributed the functional inabilities of the weakened left ventricle and the resulting pulmonary congestion. The vasodilator tolazoline hydrochloride (Priscol) was tried by the author on account of its effectiveness

and freedom from side effects. 1. c.c. (10 mgm.) of Priscol was slowly injected I. V. with relief of attack in 4 minutes. The longer acting oral tablets (in doses of 25—50 mgm.) may also have a place in the treatment of the milder forms of the condition.

NEPHROSIS TREATED BY MALARIA.

Lancet, April 26, 1952.

In Nephrosis, type II nephritis of Ellis, remissions are sometimes initiated by one or other of a variety of agents, viz., infusion of plasma, large doses of urea, infections particularly measles etc. A. C. T. H. has been added to this list (Barnett et al 1950). Sometimes these remissions are long lasting mounting to cures.

4 cases of nephrosis were treated with malaria. Dramatic effect was seen in 2 cases and no effect in the other two (one of which proved to have later type I Nephritis) E. A. J. Byrne (*Lancet*, April 26, 1952) records good results with induced malaria in cases of Lipoid nephrosis.

The etiology of nephrosis is entirely unknown. The mechanism by which remission are initiated remains equally obscure.

OCCULT STEATORRHOEA.

B. M. J. May 24, 1952.

Anaemia and other deficiencies may develop as a result of steatorrhoea in the absence of a history of intestinal symptoms. Steatorrhoea without obvious evidence of intestinal dysfunction has recently been described as "Occult" (Anderson) Diarrhoea and the characteristic macroscopic abnormalities of faeces, may altogether be absent. Histamine fast, achlorhydria may occur thus confusing the diagnosis in some 20% of cases. Occurrence of megaloblastic anaemia unassociated with pregnancy before the age of 30 is therefore an indication for very careful assessment. Clubbing of fingers is a well known feature of idiopathic steatorrhoea but it does not occur in tropical sprue or uncomplicated Addisonian anaemia. The association of Macrocytic anaemia and clubbing is therefore very suggestive of idiopathic steatorrhoea.

AMINE OXIDASE: ITS RELATION TO HYPERTENSION.

B. M. J. April 12, 1952.

Evidence is shown that there is an enzyme amine-oxidase around the sympathetic nerve endings. The enzyme destroys nor-adrenalin which is now established as the sympathetic transmitter. Amine oxidase has long been known to be present in the liver. Its importance for glycogenolysis has recently been demonstrated. Spinks and Burn have shown that in animals fed with thyroid there is a significant fall in amine-oxidase content of liver accompanied by a raised blood pressure and a raised sensitivity to the pressor action of adrenalin changes in the amount of this enzyme or in the factors which modify its activity must be carefully considered in relation to hypertension. Probably Na and K thiocyanates (used in treatment of essential hypertension) lower B. P. by their effect on thyroid gland resulting in a rise in amine oxidase in blood vessel wall.

ESSENTIAL HYPERTENSION.

John M. C. Michael, *B. M. J.*, May 3, 1952.

Clinically essential hypertension may be graded in the ascending order of gravity as follows:

Grade I. Intermittent hypertension.

Grade II. Remittent labile.

Grade III. Sustained (i) Complicated, involving important organs.
(ii) Uncomplicated (asymptomatic)

Grade IV. Hypertension and active retinal involvement without papilloedema the "pre-malignant" phase.

Grade V. Malignant hypertension with retinitis and papilloedema.

Treatment: Reduction of B. P. is the aim. There are two vascular areas in which blood is mainly dependent on aortic pressure viz. (a) Coronary and (b) Cerebral. Reduction of B. P. will certainly reduce blood flow in these situations and in the presence of atheromatous changes, local thromboses are likely. Caution is therefore necessary in the treatment of such cases. In Grades I, II, and III Subdivision (ii) no attempt is made at drastic reduction of B. P. Mild sedation, bed rest helpful in tense subjects. Weight reduction advised to obese.

Systematic efforts therefore limited to premalignant and malignant cases and Group III Sub division. (i)

Methods Available: (1) Sympathectomy: 80% of operations give poor long term results.

(2) Adrenalectomy (Total) has been tried (Green et al 50) with maintenance of life by subsequent administration of suprarenal hormones. Still experimental.

(3) Medical measures (a) Salt depletion.

Kempner's diet etc., Recently ion-exchange resins which prevent absorption of Na from gut have been used but there are practical difficulties. Salt depletion pushed too far may induce uraemia especially in premalignant and malignant phases.

(b) Thiocyanates: Narrow margin of safety with unpleasant side effects but said to relieve headache.

(c) Soluble bacterial pyrogens (Pyrogen) infused continuously to give a temperature of 101° F to 102° F each day. These dilate the kidney blood vessels and a few successes have been recorded in malignant phase. This is a harsh treatment.

(d) Veratrum alkaloids: act by inducing reflex vasodilation, the afferent arc of reflex arising in Coronary. The margin between effective dose and one which induces vomiting and other side effects is narrow. Hopes raised by early reports of Freis et al have not been confirmed.

(e) Dihydrogenated alkaloids of ergot have sympatholytic effect. Di-hydroergo-cornine and hydrergine are such substances. However pressure reduction is quite small.

(f) Hexamethonium and related compounds: Numerous reports about their use have appeared in recent literature. Good results reported by some. Dosage has to be individualised; Has unpleasant side effects.

(g) I—Hydrazino-phthalazine: reduces B. P. probably by some central action. Oral dose is 25-75 mg. m. This drug is under trial (*B. M. J.* May 3, 1952).

Pharmacology : Dr. GURUSAMY,

B.Sc., M.B., M.Sc. (Mich.)

SALICYLATES AND THE PITUITARY AND THE SUPRARENALS.

(1) B. S. Hetzel and D. C. Hine, *Lancet*, 1951, 261, 94.

This investigation was stimulated by a report of the development of Cushing's syndrome in a patient with rheumatic fever under treatment with aspirin 5 g. a day. Experiments were designed to show whether salicylates, in therapeutic dosages, had an effect on the pituitary and suprarenal glands that was manifested by removal of ascorbic acid from the suprarenal glands and could be abolished by hypophysectomy or by preliminary treatment with suprarenal cortical hormone. Sodium salicylate and p-amino salicylate were used. They were given intraperitoneally. The suprarenals were excised after about 2 hours. It was shown that salicylates cause a significant depletion of the ascorbic acid content of the suprarenals; the effect being directly proportional to the dose. The response can be abolished by hypophysectomy and tends to be inhibited by preliminary treatment with suprarenal cortical hormone. It is concluded that the therapeutic effects of salicylates are mediated by the pituitary and suprarenal glands. The beneficial results of salicylate therapy in rheumatic fever may be due to the production of cortisone-like steroids due to the activation of these glands and salicylate therapy has a beneficial effect in rheumatic carditis according to the dosage and consequent degree of stimulation.

(2) H. Cauwenberge and H. Betz, *Lancet*, 1952, May 31, 1952.

The authors state that signs of adrenal activity are produced by a dose of sodium salicylate smaller than that which produces the high blood salicylate level regarded as necessary for the treatment of acute rheumatism. Injection of sodium salicylate reveals a gradient among the responses generally regarded as evidence of adrenal stimulation. The response to sodium salicylate was reduced in rats anaesthetised with dial. It is probable that pituitary-adrenal mechanism being inhibited by barbiturates is important in the treatment of certain endocrine disorders. A warning note is given, on the strength of these findings, against the administration of salicylates and large doses of barbiturates in the treatment of rheumatic disease.

ABSORPTION OF NICOTINE IN SMOKING.

L. A. Greenberg, et al. *J. Pharm. exp. Therap.* 104, Feb. 1952.

With increasing smoking habit there has been corresponding growth of interest in its effect on health. This interest is largely focussed on the nicotine component of the tobacco smoke. Though the physiological and pharmacological aspects of nicotine action are known fairly well, there is considerable difference of opinion as to what extent the nicotine of tobacco smoke is detrimental to health. This is due to inadequate knowledge of the nicotine content of tobacco smoke and the actual amount of alkaloid taken into the body under various conditions of smoking such as inhaling or not inhaling. The role played by nicotine of tobacco smoke in a variety of circulatory disturbances (e.g. thromboangitis obliterans) and other diseases (e.g. broncho-genic carcinoma) and recent observations on the action of nicotine on the hypothalamic area influencing the pituitary

(anti-diuretic factor) have claimed the attention of the clinicians for some years. Since nicotine must be absorbed in the body in order to exercise any effects, the authors have investigated some factors, which, in the smoking of cigarettes and cigars, influence the amount of nicotine released into the smoke and the amount absorbed in the body. Two factors are outstanding. One factor is the state of humidity of the tobacco. The smoke from dry cigarettes and cigars contains from 70-90% more nicotine than that from similar products containing 11% of water. The maintenance of a proper moisture content in cigars and cigarettes has, therefore, more than aesthetic value. The second important factor is whether the tobacco smoke is inhaled or not inhaled. In smoking cigarettes or cigars only a small portion of the nicotine content of smoke is retained in the body with *Non-Inhalation*; with *Inhalation* virtually all of the nicotine is absorbed. Since inhaling is very common among cigarette smokers and rare among cigar smokers, it is likely that the former absorb considerably more nicotine than the latter. This is supported by Barker's observation (1951) that the incidence of thromboangitis obliterans is greater among cigarette smokers than among the other tobacco users.

CORTISONE AND RELATED HORMONES: EFFECT ON RESPONSES TO ANALGESIC DRUGS.

C. A. Winter and L. Flataker, *J. Pharmacol.* 1951, 103, 93.

Cortisone was found to antagonise all the actions of morphine and amidone that were studied in rats and mice. These include (1) analgesic effect, measured by D'Amour Smith method, (2) toxicity to amidone, (3) hyperactivity in mice and (4) hypnosis and catalepsy in rats. These effects of desoxycortisone were the opposite of those produced by cortisone. A. C. T. H. produced effects similar to those of cortisone. All the results, obtained in these experiments, indicate that cortisone has a stimulant action on the central nervous system.

DEXTRAN SULPHATE AS ANTICOAGULANT.

K. Walton, *Proc. Roy. Soc. Med.* 1951, 44, 563.

Dextran sulphate has a heparin-like anticoagulant action when prepared from dextran of molecular weight 35,000 and over. It is unsuitable for therapeutic use, causing precipitation of fibrinogen, agglutination of platelets and deposition of granular material in reticulo-endothelial cells. In contrast, when prepared from dextran of molecular weight 20,000 and under, it has no effect on platelets and causes no deposits in the reticulo-endothelial cells in experimental animals. It seems probable that the anticoagulant action is due to strong electro-negative charge upon the acidic groups, since it is opposed by strongly basic substances such as protamine. The presence of a co-factor in the serum or plasma is essential and in its presence the action is that of an antithrombin. If further trials are satisfactory, dextran sulphate may serve as a cheap synthetic analogue of heparin.

INTRAVENOUS FEEDING WITH FAT EMULSION.

Editorial, *B. M. J.* 1400, June 28, 1952.

It is only recently that the difficulties of preparing fat emulsions suitable for intravenous administration have been overcome. Coconut oil is emulsified under high pressure at 70-80°C and the emulsion is stabilised with lecithin. The size of the

particles is ultra-microscopic. The preparation can be sterilised by autoclaving. The intravenous feeding of patients with such emulsions is now a safe procedure with no osmotic or thrombotic effects. It has decided advantages over the administration of glucose or protein hydrolysate parenterally. On account of the high energy content of fat, more calories can be derived from a given volume of fat emulsion than from the same volume of glucose or protein hydrolysate. The use of fat emulsion in conjunction with the more conventional type of intravenous administration has the advantage of providing additional calories, particularly during prolonged periods of energy deficit. It has been proved, by the use of radio-active isotopes, that the injected fat takes part in the body metabolism.

Van Itallie *et al* (1952) report intravenous feeding of patients with fat emulsions with good results. The technique of administration of fat emulsion is the same as any intravenous administration. One litre of fat, providing 160 calories, can be given in 2 hours.

The only untoward effects reported are nausea and pyrexia, which are negligible.

Future work must be devoted to make fat emulsions more readily available and eliminate all pyrogens in the preparation.

DIGITALIS AND VENOUS PRESSURE.

(*Lancet*—P. 1200, June 14, 1952).

Action of digitalis uncertain. It increases the contractile power of the heart and as Cushny stated, causes arteriolar constriction. In normal animals there is diminished output, which Dock and Tainter explain by suggesting a constrictor action on the hepatic veins reducing the venous return. However, this has not been confirmed.

Tyrer, J. H., attacked the problem by removing the cardiac variabilities, by introducing a double perfusion pumping system, replacing the heart, the systemic and pulmonary circulation being perfused at constant rates. He suggests that the rise of venous pressure evoked by digitalis is, probably due to slight graded, general constriction, along the length of the inferior vena cava or due to localised sphincter-like constriction of the upper part of the inferior vena cava.

This supports the hypothesis that digitalis has a primary action on venous pressure.

HEAT SENSITIVITY DUE TO AUTONOMIC DRUGS.

(A warning against the indiscreet use of antispasmodic and antihistaminic drugs in the TROPICS)

R. E. Litman, *J. A. M. A.*, Vol. 149, P. 635, June 14, 1952.

The mechanism of antisecretory action of many of the antispasmodic and antihistaminic drugs is not clear. Though the anticholinergic action of atropine is known, the central action is poorly understood. Sweat glands are vulnerable not only to the cholinergic-blocking drugs but also to agents blocking the sympathetic nerves and

ganglia (e.g. Dibenamine, Etamon, Banthine, Priscoline). Various other antispasmodics and possibly several antihistaminics have the same anhydrotic action. Such drugs should be carefully administered in the hot weather and in the hot climates. Under circumstances of elevated environmental temperatures, sweating protects the body against hyperthermia. Many of the recently introduced drugs tend to inhibit sweating. The indiscreet use of these drugs in patients exposed to extremes of temperature and those who have deranged sweat mechanism, may result in the precipitation of heat stroke. This warning applies especially to patients with disease of central nervous system, the aged, the alcoholics and the chronically ill.

INFLUENCE OF DRUGS ON BLOOD COAGULATION.

D. I. Macht, *J. A. M. A.* 148, 265, 1952.

A number of widely used drugs have been found to exert a thromboplastic or coagulation-promoting influence on the blood of animals and man. The digitaloid drugs, and the antibiotics, penicillin, streptomycin and aureomycin, are amongst these; also are included the mercurial diuretics, metallic anti-syphilitics, amphetamine and some opium derivatives. Although there is usually a wide margin of safety for accommodating the fluctuations in coagulation time, attention is drawn to the possible deleterious effects of the administration of these drugs.

DETERMINATION OF ANTITHYROID ACTION OF P.A.S. USING RADIO-ACTIVE IODINE.

A. K. C. Haugren, *Lancet*, 117, July 1952.

Myxoedema has been reported occurring with P.A.S. therapy. It disappeared after the cessation of P. A. S. Using radio-active iodine (I^{131}), the author has studied the accumulation of iodine in the thyroid gland during P. A. S. therapy. It is found that, when P. A. S. is given in therapeutically, a certain concentration in the blood will inhibit the synthesis of thyroxin in the same way as thiouracil. Therefore doses of P. A. S. in excess of the patients' thyroid sensitivity may give rise to myxoedema and before P. A. S. is given the possibility of such individual sensitivity should be considered.

ISONICOTINIC ACID HYDRAZIDE: AN EVALUATION OF THE SIDE-EFFECTS IN RELATION TO PERIPHERAL CIRCULATION.

Martin, M. Fisher, *et al. N. Y. State J. Med.* June 15, 1952.

Since June 1951, with the use of isonicotinic acid hydrazide and its isopropyl derivative in tuberculosis, certain side-effects have been noted. Some of these and their beneficial effects were thought to be due to sympathetic stimulation. The marked reduction in secretions, diminished night sweats and expectorations, were considered to be due partially to sympathetic stimulation. Other symptoms attributed to the sympathetics were dryness of mouth, constipation, delayed starting of urinary stream, numbness and tingling in fingers and toes, cramps in legs, etc.

The authors studied the effects of isonicotinic acid hydrazide and its derivatives in relation to the peripheral circulation (e. g. upper and lower extremities). They studied 23 cases, which included those who had signs and symptoms of diseases of circulation pertaining to the extremities.

No patient developed X-ray evidence of peripheral arteriosclerosis while under isonicotinic acid hydrazide treatment. No permanent effects on the peripheral circulation were noted.

It was felt that sympathetic stimulation was present in a mild and marked manner in these early treated cases. Pre-existing arteriosclerotic conditions were not aggravated.

The authors conclude that the vascular side-effects pertaining to the extremities observed with the use of the drug in therapeutic doses are not to be considered as contra-indications for their use in tuberculosis. The beneficial systemic effects as manifested by the weight-gain, the drop in temperature to a normal level and the healing of the extra-pulmonary tuberculosis are such as to compensate greatly for the mild, temporary, harmless side-effects in the therapeutic levels established.

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