

The Madras
Medical College
Magazine

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Vol. XIV, No. 3.

FEBRUARY, 1935

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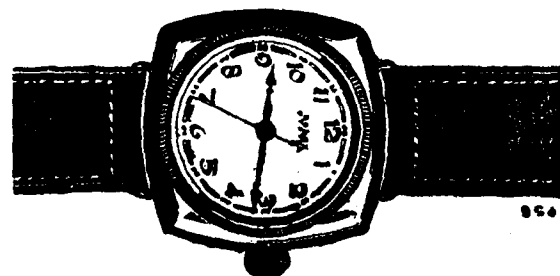
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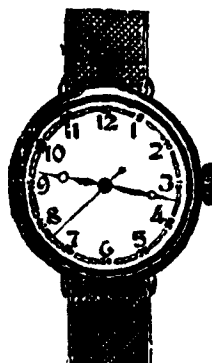


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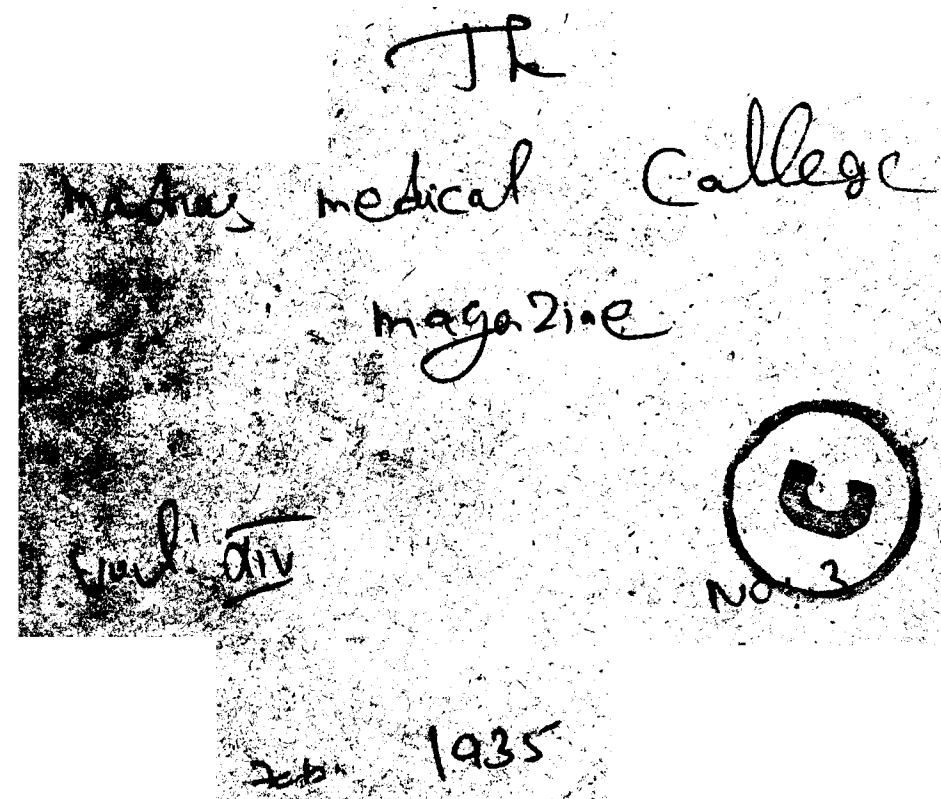
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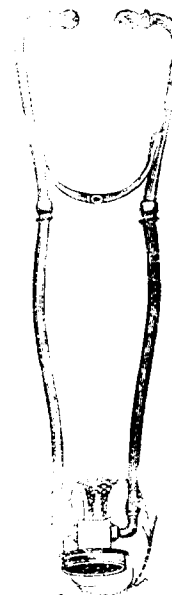
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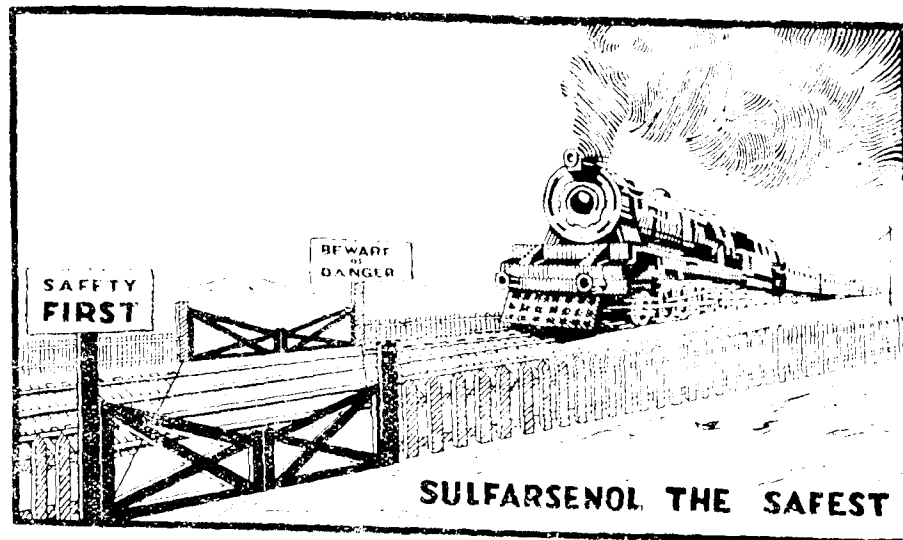
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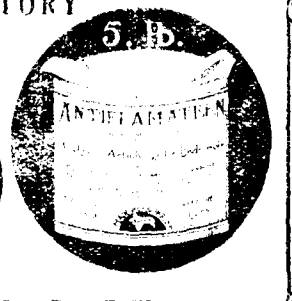
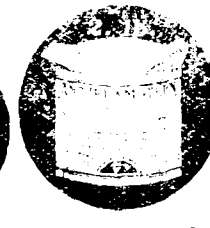
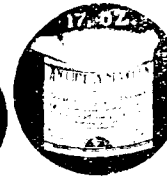
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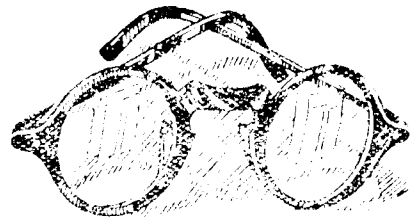
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THE MADRAS
Medical College Magazine

VOL. XIV

FEBRUARY 1935

No. 3

Recent Advances in Medicine*

BY DR. M. R. GURUSWAMI MUDALIAR, B.A., M.D. & C.M.,
*Formerly Professor of Medicine, Medical College, and Physician,
General Hospital, Madras.*

The advance has been in all directions—in the realm of diagnosis, in the conception of diseases and disease processes and in the sphere of treatment. The old bed-side observations have been strengthened by the more recent laboratory methods, which are manifold. The blood, the urine, the cerebro-spinal fluid, to mention only a few, have yielded such an amount of information that one wonders where the vista opened out by these will terminate.

Blood.—The estimation of blood urea, and non-protein nitrogen has shown the way for a safe prostatectomy, has given an indication as to when evacuation of uterus in toxæmias and eclampsias is to be attempted and has to a certain extent enabled the physician to foresee a probable uræmia.

Blood urea.—Is found increased in azotæmic type of nephritis, prolonged vomiting, intestinal obstruction, acute abdominal conditions and obstruction in ureter. Simultaneous examination of urine urea helps to further distinguish among these, as it is found to be below 2 per cent in renal cases.

Blood cholesterol is found increased in arterio-sclerosis, nephrosis, nephritis, diabetes, obstructive jaundice, cholelithiasis,

* Reprinted from April 1934 issue of the *Anticeptic*.

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No. 3

CONTENTS.

PAGE.

1. RECENT ADVANCES IN MEDICINE.				
By Dr. M. R. Guruswami Mudaliar, B.A., M.D. & C.M.	...	...	...	171
2. THE PLACE OF VERSION IN OBSTETRIC OPERATIONS.				
By R. K. K. Tampan, B.A., M.B., B.S., D.G.O.	...	...	...	183
3. BLOOD GROUPING AND BLOOD TRANSFUSION.				
By Dr. D. Govinda Reddi, M.D.	...	...	...	206
4. THE APNOEA TEST	...	...	...	215
5. MEDITATIONS	...	...	...	217
6. THE ASCETIC	...	...	...	218
7. ADAM AS DOCTOR.				
By S. Balakrishnan, IV Year	...	...	...	219
8. THE MEDICAL FRIENDS OF DR. JOHNSON.				
By Mr. V. Srinivasan, M.A.	...	...	...	222
9. CASE REPORT.				
By V. S. Subramanian, Student IV Year	...	...	...	227
10. EDITORIAL NOTES	...	...	...	229
11. THE IMPATIENT INPATIENT.				
By A. W. Mathuram Santhosam	...	...	...	231
12. THE REVOLT OF THE REVIVING FAITH.				
By T. Janardhanan	...	...	...	234
13. MEDICAL COLLEGE STUDENTS HOSTEL	...	...	...	243
14. ATHLETICS	...	...	...	252
15. MEDICAL COLLEGE ASSOCIATION AND MAGAZINE RECEIPTS AND PAYMENTS ACCOUNTS	...	...	...	260
16. UNIVERSITY OF MADRAS	...	...	...	261

early malignant disease, pregnancy and bacterial infection. It is found decreased in all forms of anæmias, primary and secondary, in acholuric jaundice and in splenic anæmias. Oedema of cardiac or renal origin could be differentiated by the quantity of cholesterol found.

Blood calcium is found increased in arthritis deformans and otosclerosis. While it is decreased in azotæmic nephritis, tetany, acne vulgaris, eczema and folliculitis.

Blood phosphates increased considerably in azotæmic nephritis and decreased in rickets.

Blood creatinine, if increased, is a sure sign of permanent renal damage.

Blood sugar estimation has enabled one to distinguish between renal glycosuria, alimentary glycosuria, potential diabetes, early diabetes, confirmed diabetes and treated diabetes.

Urine.—Absence of *chloride* has been noted in lobar pneumonia and acute rheumatic fever. It is also said to be decreased in melancholia and in dementia.

Presence of *indican* has been found in malignant disease, appendicitis, and in chronic intestinal stasis.

Urine diastase has been found to be constantly increased in new growths of pancreas (30 to 100) and in acute pancreatitis (200 or more). It is decreased below 6.6 in renal disease, owing to the fact that diastase being a colloid, is excreted with difficulty.

Albumosuria occurs when there is pus in the body whether empyema, purulent meningitis, pus in abdominal cavity or pyemia. It may be seen in acute yellow atrophy, in intestinal ulcers and in some cases of nephritis. It may be the first sign of Kahler's disease (multiple myelomatosis).

Cerebro-spinal fluid.—Lang's colloid gold reaction has been found in cases of general paralysis, generalized syphilis of

central nervous system and certain forms of meningitis, for example, meningococcal meningitis, and tubercular meningitis. The paretic, luetic, and meningitic curves obtained are distinctive.

The Wasserman reaction and Kahn reaction are newer additions to our diagnostic armamentarium. The cutaneous reactions of Shick and of Dick and response to various proteins in asthma are examples of another mode of investigation of disease.

There are ever so many newer methods which for want of time I have to omit, hoping that those already mentioned will stimulate the practitioner to get a closer view of these at his leisure.

Conceptions of Disease.—A good number of diseases have come to be regarded in a new light, thus the conceptions about rickets have altered. The ideas about nutritional diseases have been changing rapidly. *Pellagra* and *Beri-beri* are looked upon in a different light than they used to be. Many of the infectious fevers for example, *measles*, *cerebrospinal fever*, *dengue*, *black-water fever* are interpreted in a different way. *Epidemic encephalitis* is looked upon as a disease caused by virus entering directly the nerve terminal and spreading via the dendrites and not as a peri-lymphatic infiltration with secondary degeneration in the nerves. *Diabetes mellitus*, which became recently associated with the morbidity of pancreas, as evidenced by the pathological work of Langerhans and the therapeutic work of Banting, is already coming to be conceived as probably dependent on the condition of the anterior lobe of the pituitary.

The position of *endocrine disturbances* is a study in itself. The more we study the activities of these glands, the more accurate our knowledge of blood chemistry and the sympathetic and para-sympathetic systems becomes, the clearer grows their bearing on life and metabolism. Our ideas of the pathology of tuberculosis of lungs are undergoing rapid changes. The conception of heart disease has undergone a radical change.

if the diet, no matter what its composition, is deficient in vitamin B, extensive damage is caused. They may have a bearing on certain kidney lesions.

Dr. Drummon and Dr. Parker confirm the findings of Dr. Evans of California that vitamin B deficiency in the diet of the male seem to bring about a preponderance of female progeny.

Vitamin C.—It is associated with scurvy both adult and infantile type. This vitamin is found in foods and vegetables. There used to be many failures in the treatment of scurvy by fruit juices; the cause was found to be due to the readiness with which vitamin C is destroyed by oxidation. Oxidation which accompanies ordinary boiling is the cause of the destruction of vitamin C. If milk is boiled in vacuum, it preserves its anti-scorbutic properties. Copper vessels destroy the vitamin by a process of catalysis. The only source which does not lose its vitamin C by heat is tomato juice.

It is known that absence of vitamin C produces degeneration of tooth pulp. Hence, scurvy and dental decay could be successfully combated by supplying vitamin C.

Vitamin D.—This is associated with rickets. To briefly state the result of last 15 years experimental works in all countries of the world—two dietary defects are necessary to produce rickets in young animals. One is an absolute absence of vitamin D, and the other is an abnormality in the proportion of calcium and phosphates in the food. Hence, vitamin D would be required in the treatment of rickets.

Another factor in the cure of rickets is the direct action of sun-light or ultra-violet light on the skin. The inference that the substance vitamin D exerts a photo-chemical effect appears to be substantiated by the experiments of Hess and of Steenbock who demonstrated that various vegetable oils and certain other food stuffs ordinarily therapeutically inert are rendered curative to rickets by irradiation. Quartz mercury vapour lamps could

be used for this purpose. That Cod liver oil cures rickets was known for centuries, that sun-light prevents rickets was known for ages. The modern methods of investigation have re-discovered these truths and placed them on irreproachable scientific basis.

It has been further shown that deficiency of vitamin D independently or in association with vitamin C can produce dental caries.

Turning to the endocrines: In the field of therapeutics one has time only to mention the revolutionary effect in the treatment of diabetes by the discovery of insulin. I am certain all are familiar with the use of insulin in diabetes mellitus. Perhaps, it is not as generally known that insulin is a valuable treatment in cases of mal-nutrition and marasmus. I have found it very effective in the treatment of myocarditis, coronary thrombosis and all sorts of anginal pains. I have been using 3 to 5 units of insulin as injection, while giving fairly large quantities of glucose or glucose D in these cases. It improves the nutrition of the heart.

Thyroid in the treatment of myxoedema is no new thing. But that it is used in a host of conditions of varying degrees of hypothyroidism is a new venture. The dose depends on the basal metabolism rate.

Adrenalin solution has been used in all cases of anaphylaxis and in cases of low blood pressure. During the last few years, it has been used to revive a heart that has suddenly stopped during operation or during anaesthesia. It has ceased to be used in cases of shock, since it is argued that in this state the real indication is to improve the circulation in capillaries and for this purpose Isotonic saline solution intravenously is preferred.

Parathormone.—Salvation formulated in 1923 that the para-thyroids normally control calcium metabolism. Hammet in 1927 reported that the para-thyroids are involved in the same

series of metabolic changes as influenced bone-formation. During 1929 Bauer, Aub and Albright reported that injections of parathormone caused decalcification of trabeculae of bones in rabbits. Lambie and Hawes reported a similar thing in rats.

The effects of injections of parathormone on serum calcium curve is always definite and characteristic. From these observations it follows that one ought to be careful in prescribing parathyroid as when large doses are given bone seems to be decalcified to keep up the blood calcium and dangerous results ensue.

Chemotherapy.—Another great venture of the last few years has been in the field of chemotherapy—that is with drugs which are of low toxicity to the host, while very lethal to the parasites. The greatest success in this line attended some treatment of tropical diseases. In England, doctors King and Laidlaw, Professor Cohan of Leeds and Professor Browning of Glasgow found that some Aminostyryl phenoline compounds have trypano-cidal action in vivo. Some amino-anil-phenoline derivatives were also tested in 1926. Trypanosoma Bruci infection in rabbits and mice were cured by a single injection of styryl. Other investigators stressed the action of Neosalvarsan, Kharsivan, N. A. B. and such preparations of arsenic in the treatment, of triponosome infections and later of all spirillosis. Later still various bismuth preparations were brought out for the same purpose, but most of them were found to be toxic to the host. One of the latest of these preparations, bismostab is found to be fairly effective, without being dangerous. The treatment of tuberculosis has been and is being carefully investigated. In addition to sodium morrhuate, I have found various preparations giving fair results, chief of which are calcium chloride, colossal calcium and some preparation of gold. Mollguard's gold thiosulphate has been tried in Brompton Hospital and St. Thomas Hospital, London. Dr. Beryl is of opinion that it is a useful preparation. Prof. Fraser of St. Bartholomew Hospital found Sanocrysin useful. I have seen skiagrams of cases taken

during the course of treatment with gold salts and I agree with their opinions. However I have found Solgonol B oleosum more effective and less toxic than the other gold preparations.

More recently, Bayer gave to the tropical world his "205," a drug which has fully justified itself in effecting a cure in early trepanasomiasis. Later still Forneau brought out his "307," which is found to give the longest immunity against trepanasomiasis.

In short, so far as tropical diseases are concerned, extraordinarily good results have been obtained in trepanasomiasis, dysentery, bilharziasis, malaria and kala-azar. Among widespread diseases, tuberculosis is being tackled with encouraging results, and syphilis has been controlled. Fuadin has been found to be effective in infective granuloma.

Some acridine derivatives like acriflavine, tripaflavine and rivanol have had a certain amount of success. I have used rivanol with good results in cases of dysenteries.

Salyrgan is one of the latest diuretics used successfully in water-logged conditions. It has to be preceded by ammonium chloride for two days and could be given intravenously or intramuscularly. Euphylline is used for the same purpose in Vienna.

Quinidine has been used for auricular fibrillation. In my practice, I have found two grains three times a day useful and quite harmless. The English School does not favour this drug because of the risks, but I believe the risks are connected with larger doses.

Kaprokol or hexyl resorsinol was introduced by Leonard as an effective urinary disinfectant. It is said to be 46 to 50 times as powerful as carbolic acid, and with all that non-irritating to the kidney. I have found it very useful when it did not irritate the bowels.

Pyridine is another new urinary disinfectant which answers sometimes better than Caprokol. Cylotropine as an injection is another drug for the same purpose which has come to stay.

Marked advance has been made in the treatment of helminthic infections. Oleum Chinapodium or its active principle ascaridol, and carbon tetrachloride have become indispensable in the treatment of hookworm. As Chinapodium has a depressant action on the heart, and as carbon tetrachloride has got a toxic action on the liver in persons with calcium deficiency, I have made it a rule in my practice to give calcium and glucose for two days prior to the administration of oleum chinapodium and carbon tetrachloride.

Thymol treatment of hookworm has undergone modification after the investigation of Mahsker and Fr. Caius. The treatment advocated is 60 grs. in single dose without previous preparation or succeeding purgative. I have however considered it safer to divide the 60 grs. of thymol into three parts and give it at intervals of half an hour, taking the usual precautions of prohibiting oils, butter, alcohol, chloroform and other solvents of thymol.

Schistosomiasis.—Tartar emetic has been in use for a long time. Recently various pentavalent preparations of antimony were tried without satisfactory results. A Trivalent preparation von Heyden "661" known as antimosan has given fair results in every variety of schistosomiasis. But this preparation is also somewhat toxic. Another Trivalent preparation Fuadin is found to give good results and not so toxic. Emetine hydrochloride is another drug which has given fair results in goat infected with *S. spindalis*. *S. Haematobium* and *S. Mansoni* infections in man have been treated with emetine with results somewhat less marked than that of tartar emetic.

Amæbiasis.—Emetine hydrochloride has been found quite useful against active amœbæ. The encysted forms however are not affected. They can be killed by emetine bismuth

iodide, but this drug causes nausea and vomiting. Emetine periodide is found to be equal if not superior to emetine-bismuth-iodide and has the advantage that there is no nausea, no vomiting, no cardiac irritation, no desquamation of skin. Aur-Emetine, Yatren, Stovarsol, Rivanol are some of the other drugs that have come to prominence recently in the treatment of amœbiasis. Kurchi-bismuth-iodide is claimed by the Calcutta School to be very useful.

Malaria.—Quinine has held the field for a long time, order of efficiency being quinine-bi-hydrochlor, quinine sulphate, and Euquinine. The sexual forms specially, the crescents of malignant tertian, are not affected by quinine salts. Hence, a number of substitutes have been brought forward, which I shall give you in a few words.

Stovarsol was found useful only in B. T. Quinine-stovarsol was found useful in B. T., M. T. and quartan. But relapses are common. Plasmoquine was brought in 1926; in B.T. and quartan, plasmoquine was found quite equal to quinine, but with M. T. though crescents disappeared, relapses were more common.

Quino-plasmoquine was brought to prevent relapses.

Later into the market was brought in Atebrin. Ring forms are destroyed easily by it, but to destroy the sexual forms of it has to be followed by plasmoquine. Later still Tabetrin was tested in my wards last year and was found to destroy both ring forms and sexual forms.

Leishmaniasis.—Tartar emetic was the drug used from 1915. It has been completely replaced by ureastibamine discovered by Dr. Brahmachari of Calcutta. Other drugs which have been brought out to replace ureastibamine if possible are stimabine, neostibosan (Von Heyden 693 and 693 B) Amino-stiburea, neostan, ureastibol and stibosan (Von Heydon 471). Stibamine was too unstable and stibanil was too toxic, and so

not used. Drugs now of choice are Ureastibamine for intravenous injection and Von Heydon 493 B (neostibosan) for intramuscular injection.

A few other fields of therapeutics that have been utilized for combating diseases are prophylactic treatment with *Bilivaccine* for cholera, typhoid and dysentery, and *bacteriophage* treatment for cholera and bacillary dysentery. In using the bacteriophage the precautions to be taken are precede by alkalies, prohibit milk, abstain from giving antiseptics for at least 3 days after bacteriophage has been stopped, as these are said to multiply in the intestines and this activity would be inhibited by antiseptics.

Convalescent serum has been found useful in measles and acute anterior-polyomyelitis. Non-specific protein therapy or shock therapy has been tried with malarial blood (B.T.) for G. P. I. and disseminated sclerosis and with milk injections for chronic septic conditions.

The Place of Version in Obstetric Operations.*

BY R. K. K. TAMPAN, B.A., M.B.B.S., D.G.O.

By version is meant an operation undertaken to change the presentation of a foetus, so that one or other of the foetal ellipse is substituted for the given presentation. It is an artificial alteration and substitution of one presenting part for another.

The objects of this operation are mainly two-fold :

- (1) To change an abnormal or a relatively abnormal relation of a foetus to the pelvis, to a normal or relatively normal one in relation to the pelvis.
- (2) As a preliminary or preparatory operation when rapid delivery of the child is indicated by the condition of the child or of the mother.

Varieties.

There are two varieties of version described, *viz.*, Cephalic and Podalic, depending upon the resultant polarity that is obtained in the end. This result is obtained either by purely external manipulation, by combined internal and external manipulations, or by purely internal manipulation in utero. A better classification is the one where the whole hand is introduced into the uterus, or two fingers only are introduced the latter one being named after Braxton-Hicks, and the one where the manipulations are purely external. We will consider these varieties one by one.

Purely external version.—Is always a prophylactic operation; it is undertaken when the presentation is found to be a

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breech or transverse; rarely it is undertaken to convert a head into a breech, where there is a complicating condition like placenta praevia. But the present-day tendency in all such cases is to treat the placenta praevia by Willett's forceps rather than control the haemorrhage by traction on the half-breech which is the underlying principle in converting a head into a breech in such cases.

When to do this Operation? There is a lot of controversy raised as to the feasibility of this procedure being adopted in an outpatient department in all antenatal clinic in the western countries. The position taken by most of them to-day is that the operation is best done as early as the 32nd to the 35th week, which is the most favourable period. If this is done, it is imperative that the patient be examined every 2 weeks, to see if the condition has gone back to its original position, in which case the operation is repeated and the position again maintained till the woman reaches full term and gets into labour. This is certainly a method of prolonged waiting and repeated attempts at obtaining something which we are not quite sure of. As to the feasibility of this procedure in a country like ours, it is far from satisfactory as we all know. A crying child, a worrying husband, an angry mother-in-law or a sickly relation, always keep our antenatal women at home and on the foot, till they actually get into labour, when they could be admitted and delivered in the labour ward—whatever be her antenatal condition. Rarely they seek aid of our antenatal department till they are hard hit by progressive anaemia, oedema or the convulsions of an eclamptic toxæmia. Under such circumstances, one is at a loss to know where the chances of external version are, unless the Health Visitors and those who are responsible for maternal and child welfare work make up their minds to send all malpresentations they diagnose to some antenatal clinic or other, where there are provisions for making the necessary manipulations as said before. Even then, the chances to keep the woman under observation and give her the benefit of repeated examinations to

maintain the position gained till she gets into labour, are not always available. After all this trouble, is a cephalic presentation more desirable than a breech or transverse? In other words, is breech or transverse so monstrous? Occasionally case have come to our notice where spontaneous conversion of breech into vertex has occurred as late as 36th and 38th weeks and delivered as vertex.

A claim for external version is that it is a painless procedure, but where does the question of pain arise when an equally efficient procedure can be adopted at a later stage of labour under anaesthesia. There are certain conditions to be fulfilled before external version can be done, *viz.*, (1) the child should not be too large. It should be freely movable.

(2) The bag of waters must be intact, the pains absent or weak. This condition is very essential since the patient will not allow any manipulation if she has strong pains and with strong pains, even an intact membrane may rupture with manipulations.

(3) There should be no immediate or prospective indication for rapid delivery, unless recourse can be had for abdominal section, if so required.

(4) There should be no contraction of the pelvis. Pelvic contractions are contraindicated for the cephalic method of delivery especially in certain types of them as we will see later on, unless one is prepared to undertake operations like pubiotomy, symphysiotomy, etc.

(5) A thorough knowledge of the relative position of the different positions of the foetal ovoid, must be had because in cases like extended breech where the two limbs act like splints, and prevent movement of the foetus, may cause rupture of the uterus as a result of forcible manipulations. The importance of a skiagram in such cases cannot be over emphasized.

(6) The abdominal wall must be thin and not laden with fat so that the manipulations of pulling down and pushing up may be done easily and the ground gained with each step may be properly maintained.

(7) There should be no tender areas in the abdomen and the woman must be of a complacent temperament to co-operate with the obstetrician to make the performance a success.

The objections raised are many and the dangers that may ensue are not few. Improper version may be done through a mistake in diagnosis, thus converting a cephalic into a breech presentation. The importance of X-ray in such cases is certainly above par. But the chances of a skiagram at the hands of an ordinary practitioner are next to nothing. Further there are other dangers such as

(1) Premature rupture of the membranes with prolapse of the cord or small parts of the foetus.

(2) Cord may get coiled round the neck or body more frequently.

(3) Occasionally the uterus may repute especially so in cases where the uterine musculature is weak or fibrous as a result of some previous injury or disease.

(4) Premature rupture of the membranes may result in the onset of labour before term if the version were done before the 36th week. Cases of premature separation of the placenta resulting in severe bleeding, jeopardising even the life of the patient, are reported. Further, even after the external version has been successfully performed the position is not maintained permanently necessitating thereby a repetition of the procedure, with all its attendant risks.

There are several contraindications to this operation, *viz.*, multiple pregnancy, marked pelvic contraction, dead foetus, previous Caesarean scar, threatened uterine rupture, hydramnios,

oligo-hydramnios, premature separation of placenta, placenta praevia, bicornate uterus and eclampsia. Monstrosities are a definite contraindication. A fat and tender abdomen may make the manœuvre impossible; in short, external version is an operation with a limited field of application; and as I said before we are bargaining thereby for a position whose limitations and complications we do not know, to one whose probable complexities and possible terminations we do know. Probably in a small minority of cases the external version may be of use especially when the woman gets into labour soon after the conversion of breech into vertex.

Technique.—Is simple. Raise the patient's head and shoulders somewhat, and flex the thighs to secure maximum relaxation of the abdominal muscles. Empty the bladder, manipulate gently and make a correct preliminary diagnosis of the presentation and position. First, raise the breech from the pelvis with both hands if necessary, and carry it forward towards the iliac fossa on the side opposite to that on which the head is to be brought down. The head is then pushed down towards the pelvis, while the breech is pushed up towards the fundus with the other hand by very gentle, gradual intermittent pressure. Thus by alternate stroking and pushing movements the head is brought over the inlet. Time should not be a point for consideration and force should never be used. Manipulations must be done only during the interval between uterine contractions and the Operator must see that the position gained is maintained during the pains, till the next push can be given at the proper time. When the head has been brought over the inlet, it is desirable that it be pushed down into the inlet where it is held for a short while till the next pain comes and fixes it in that position. Some people consider that rupturing the membranes at this stage is a definite improvement in the technique. But this procedure has got its own limited application to cases which are near full term. If the breech is fixed in the pelvis, the disengagement of the breech is a

difficult process. It must be helped by putting the patient in Trendelenburg's position or by inserting two fingers P. V. and trying to push up the presenting part. Pads and binder are supposed to help to maintain the position. With all these, the position may revert to its original condition, when it may have to be repeated once or even more before the onset of labour.

Combined version or Braxton-Hick's method.—Its main indication is in cases of placenta praevia. In cases where the child is not full term, where the question of the life of the child is not a matter of great concern, B. Hick's version is an ideal operation where the medical attendant has only limited facilities to control the haemorrhage in a case of placenta praevia. This operation can be performed at a much earlier stage of cervical dilatation; it has been suggested that it can also be done for cases of prolapse of the cord, occasionally in shoulder presentations, and very exceptionally to turn the head down in breech presentations. But the child must be of a very high degree of mobility to make the operation successful. Further if the presenting part is high to reach it P. V. with 2 fingers, and exert a certain amount of pressure to get it disengaged, and replaced by some other pole of the foetus, is certainly difficult. This operation is only a preparatory one, and in case an emergency occurs such as prolapse of the cord which necessitates immediate delivery of the child, our resources are at an end and the child has to be left to its own fate. But in cases where the child is premature, cervix only 2/5 dilated, and a partial placenta praevia, woman bleeding, B-Hick's helps to bring down a foot and compress the placenta with the half breech, thereby effectively controlling the haemorrhage.

Internal Podalic Version.

This is one of the most valuable resources in obstetrical emergencies; though it was an operation most dreaded by the olden-day obstetrician, as it meant an invasion of the uterine

cavity; it has of late been given due consideration especially after the advent of Potter of Buffalo, who is the pioneer in perfecting the art of version as it is practised to-day. To him, it was all a question of election-version by choice, not version as an emergency, as it is done in institutions like ours. Potter knew of only two modes of delivery in cases where the child escaped because of its being delivered naturally before he reached the place. Internal podalic version and Caesarean section were the only two obstetrical operations which Potter practised. He was subjected to a lot of criticism in his early days of version, but later he made many an obstetrician who saw him at version believe that whatever he preached he practised, and that in his hands version was an ideal operation under proper conditions. His foetal mortality was low—2·3%. It will be interesting to know that out of 2,253 women delivered by Potter, 1,858 were delivered by internal podalic version, 180 by Caesarean section, 64 by forceps, 130 by other modes of delivery and 31 were natural. Thereby giving a figure of operative delivery of 98·2% and natural 1·8%. This is an extreme position. But there are cases where internal podalic version is an ideal operation and done at the correct time, gives the best results to mother, child and the obstetrician.

Conditions to be fulfilled before version can be safely done are :

(1) Thorough knowledge of the child in utero as regards its presentation and position.

(2) There should be no serious disproportion between the size of the foetal head and that of the parturient canal. If there is disproportion, deep tears are possible, including rupture of the uterus, especially lower uterine segment.

(3) Cervix must be fully dilated or nearly so. If not, the cervix must be soft and dilatable. If the cervix is hard and there is a cuff hanging loose, the aftercoming head may

be caught and gripped by the cervix and in the forcible extraction of the aftercoming head, the cervix may itself get torn, the tear often extending to the lower uterine segment.

(4) The uterus should not be in a state of primary inertia or tetanic or tonic contraction. In the former, there will be danger of P. P. H. and in the latter the rupture of a thinned out lower uterine segment.

(5) Membranes must be intact or recently ruptured. But in most cases of malpresentations for which this operation is of special value, the question of rupture of the membranes should not be taken into deep consideration because membranes rupture early in such cases. The important thing to be taken account of is the quantity of liquor amnii. If the liquid has been almost wholly drained out, the uterus tries to contract down on the foetus and there may not be enough space left in utero to put in the hand to bring down a leg and turn the child.

(6) The woman must be under deep surgical anaesthesia, so that all reflex, psychic and voluntary muscle activity may be eliminated. Even in tonically contracted uterus, version is possible under deep chloroform anaesthesia supplemented with $\frac{1}{4}$ gr. morphia.

(7) The child must be mobile, that is, not wedged in tightly into the pelvis. The head must be floating or just engaged but easily lifted out of the pelvis. The question of contraction ring in these cases is to be remembered, and is a definite contraindication for version. The F. H. must be good. If version is to be done in a case of prolapsed cord, absence of pulsation in the cord is no contraindication, as immediate version and extraction may secure a live child in some cases where the cord, though non-pulsatile, is full and warm.

Indications for version.—In the delivery of a pregnant woman who has been entrusted to our care, it must be always our aim to do three things :

(1) to deliver safely the mother and leave the birth canal in a safe condition,

(2) to deliver a living and uninjured child, and

(3) to save the mother as much suffering as possible.

These three things are done by version. But to attempt at delivering every woman by version is too extreme a step as was taken by Potter of Buffalo. To him, the most important indication for the operation was to diminish the agony of childbirth, by eliminating or cutting short the second stage of labour. But to convert every case of labour into one of operative delivery is certainly a bold step and probably there will be very few to share the opinion of Potter. For us, the operation has but a smaller field of utility, but a field much larger than for many other obstetrical operations. To take them up one by one :

(1) Transverse and oblique presentations. Version at the time of election in such cases as soon as the membranes rupture and the os is fully dilated, is a safe and sound operation. But the result varies with the cause of this oblique presentation—the parity of the individual, the relative sizes of the pelvis and the foetal head, the dilatation of the cervix and the condition of the uterus. If the woman is a primi, with a slight degree of pelvic contraction, version is difficult but possible. But in extreme degrees of contracted pelvis, version should on no account be attempted.

(2) Version is indicated as a means of terminating long and tedious labour, where presentation is vertex, but because of slight degrees of disproportion or of ineffective pains the progress of labour has been slow and unsatisfactory. The dangers in such cases are that the child whose head has been too long in the pelvic cavity, undergoing pressure off and on, is too much damaged and the result is that though the child is born alive for the time being, the chances of its survival are few and it may develop convulsions, hyperpyrexia, diarrhoea, etc. and

may die in the course of the first week. Such cases should not be allowed to go indefinitely and version under the circumstances gives very satisfactory results. The results are even more convincing, if the child is occipito-posterior, a parietal bone presentation, or in any of the deflexion attitudes, like orbital, glabellar, face, chin or brow. In such cases, labours are more trying and tedious, pains are hard and frequent, patient often gets tired and fatigued. Complete dilatation occurs early, but the head remains persistently high, or else even with marked degrees of moulding, makes little or no progress through the birth canal. The child may be born naturally eventually, but it is sure to show signs of intracranial compression resulting in death soon after, or mental debility later on. In these cases, it is worth while terminating labour in the most prompt and conservative manner and to do this, if the head is floating or has only slightly descended, version is certainly preferable to high forceps and is the method of choice.

(3) In prolapse of the cord or an extremity, when dilatation is complete and rapid delivery is essential to save the child, version with immediate extraction gives the best result. In cases of prolapse of the cord, if the condition is recognised immediately after rupture of the membranes, and the woman is a multipara, with at least $3/5$ dilatation of a dilatable cervix, no other method of delivery is so satisfactory as version. Forceps is advocated by some after manual dilatation of the cervix, but the time during which the cord will be compressed by the head in a forceps delivery with a forecoming head, is much more than the compression of the cord by an aftercoming head in a version and extraction.

(4) In cases of accidental haemorrhage, if the conditions are satisfactory and there is an indication for termination of labour, version can safely be undertaken. But one has to admit that in such cases, there is no special indication because of this condition, unless it is associated with a floating head or malposition or other conditions indicating version.

(5) Selected cases of placenta praevia, where dilatation of the cervix is complete or can be completed easily. But this is always a risky procedure. Passage of a hard head through a soft vascular, undilated cervix, is liable to meet with severe tears which may open up the broad ligaments and lead to severe haemorrhage. In such cases, if the bleeding is much to begin with and B. Hick's method is not readily manageable, introduce the hand in utero by the side of the placenta, do version, and bring down a foot, compressing the placenta with the half-breech. The bleeding is controlled and the delivery is left to nature. But I have seen cases of placenta praevia safely treated with version and immediate extraction, but it is then a matter of mature judgment and well ripened skill.

(6) In cases of contracted pelvis. Version has a definite place in the treatment of this condition. But is certainly a moot point to decide which mode of delivery to undertake in certain borderline cases. In extreme cases of pelvic contraction, the position is absolutely secure. In mild degrees of contraction, the progress of labour depends upon the strength of uterine contractions, and the mouldability of the head. It is in the cases where there is a definite non-engagement of the head, where it continues to be so in spite of strong pains even after rupture of the membranes, that difficulty arises. The choice lies between a lower segment caesarean and version or other methods of vaginal delivery. In some of these cases, even a previous history of natural labour does not help us very much, because it is a question of the size of the child, then and now. In such doubtful cases, I think it is worth while taking to the abdominal method of delivery, and not risk the child's life, if the facilities are available. But if there are any contraindications to abdominal section, version is the next best. Version is best suited in cases of mild degrees of flat pelvis, because in such cases the difficulty is over once the head has passed the inlet, and then there is no more trouble. Even in the inlet, it can be made to enter in the required diameter, by manipulating

the head if it is delivered as an aftercoming one—a manipulation which we cannot take advantage of in a forecoming head.

Further there is the advantage of a longer wedge in these cases of aftercoming head, as also the benefit of a handle to hold and pull the head through. Against this is the argument of the extreme pressure which the head is subject to in such cases, though for a short while it be, with all its attendant risks, from injury to the brain to the disarticulation of the neck. Postmature child, with no mouldability of the head, is more easily delivered by version than by other means.

Contraindications.

Contraindications are few, if the conditions required for the operation are satisfied. Neglected shoulder presentation or any other malpresentation where the liq. amnii is all drained away and the uterus has contracted down on the child, the lower segment is thinned out and the Bandl's ring is standing prominent and high, version is certainly not to be thought of. Extreme degrees of pelvic contraction, premiparity with rigid soft parts, monstrosities, hydrocephalus, sepsis of a definite nature, as indicated by foul smelling amniotic liquid, macerated foetus, make the list of all the conditions contraindicating this operation. Neglected shoulder presentation and minor degrees of pelvic contraction with a foul-smelling discharge ought to be treated without any intrauterine manipulation, decapitation, forceps, and perforation are to be resorted to in these cases rather than risk the life of the mother in pursuit of saving the life of a doubtful child.

Potter's Technique.

The technique evolved by Potter is the one that has been adopted by him after doing a very large number of these operations. He claims it as the best, with the maximum benefit to the operator and to the child and minimum injury to the mother.

The advantages claimed by him for his promiscuous indulgence in version are :

- (1) The woman does not suffer pain and agony after the dilatation of the os.
- (2) Soft parts are thoroughly dilated and are not subjected to pressure for a long time, so that a relaxed flabby vagina, torn perineum and relaxed bladder are not common occurrences.
- (3) The woman has no rise of temperature. The tender tubes and ovaries and latent gonococcal infections are not lighted up to activity by long and continued pressure and bruising of an oncoming head.
- (4) The woman has less of shock from delivery and so has greater resistance during the puerperium.
- (5) Bleeding of any moment never occurs. The uterus is well contracted.
- (6) Less compression injury to the baby's head than in tedious labour of forceps delivery.
- (7) Maternal mortality and morbidity are less.
- (8) Any concealed prolapse funis, which is a common cause of foetal mortality, is obviated.
- (9) Less work for the accoucher.

Potter's technique consists in preparing the patient as for a major operation, shaving, scrubbing and cleaning. Operator gets similarly prepared, gowned and gloved. Woman is put on the table, in modified Walcher's position, anaesthetised to stage of surgical anaesthesia with chloroform, bladder is emptied, the vagina and soft parts are ironed out thoroughly with the fingers which are passed up to the fornices and then pressure applied in a downward and outward direction. This step is given a lot of importance in the procedure. Then the

cervix is stretched and dilated, if it is not already fully dilated but is soft and dilatable. Potter claims that manual dilatation can be affected in the primi as in the multipara. When the hand is introduced into the uterine cavity between the uterine wall and the membranes, the membranes being separated from the uterine wall, by the movement of the hands, taking care always to work away from the placental site. Next a towel is tied round the operator's wrist to prevent the liquor amnii draining away; the hand in the uterus now makes out the position, size of the child, the condition of the cord and the diameters of the pelvis. Potter always used the left hand and he seized both feet together between the middle and first finger. Then he extracted and brought both feet together to the vulva and delivered them together, the child's body having rotated meanwhile. Slight pressure is required to lift the head out of either iliac fossa, with the other hand on the abdomen. Continue gentle traction until the knees are exposed. Then gently pull upon the anterior foot and lower leg until the pelvis of the child comes into view, when it will be seen that the pelvis of the child is rotated into opposite direction and is eventually delivered in that direction. This brings the baby to the world with its back transverse to the pelvic outlet and the buttocks delivered in the hollow of the sacrum. No attention is paid to the cord at this stage, if it is loose and free, but if it is tight and short, it is clamped and cut. Pull down well and then expose the scapulae well before attempting to deliver the shoulder. Then the fingers and hand of the operator are pushed well above the shoulder, between the lips of the vulva and the anterior shoulder is delivered with the upper arm. The operator now grasps the baby with his hand over the exposed shoulder and chest and rotates the body so that the posterior arm becomes anterior and is delivered as such. Both shoulders being delivered, lower arms fall out by themselves, or can be gently lifted across the chest and drawn away from the perineum under the pubic arch. This method claims to avoid extensive injuries

which are otherwise caused by the delivery of the arm as a posterior one. At this stage, see if there is cord round the neck; if loose, slip it over the shoulder; if tight, unloosen it or clamp and cut it if necessary. Then insert two fingers of the left hand into the baby's mouth and with right hand, gentle pressure is exerted upon the occiput over the pubes, to aid in the flexion of the baby's head and to direct its passage through the pelvic canal. Baby's mouth is now exposed; the mucus is milked out and the baby is allowed to cry. Potter believes in leaving the head in this position long enough to thoroughly dilate the perineum and vaginal structures and then the nose is delivered, followed by the brow, in an extremely flexed condition, which is further assisted by lifting up the body of the baby well forward and away from the perineum. In rare cases, forceps may have to be applied to the aftercoming head, in which case, the body of the child is lifted up, and held against the mother's abdomen, and almost parallel to it, and forceps applied as usual below it.

The technique that is adopted in this hospital is slightly different. The method has been found to yield good results from the point of view of the mother and child. The usual cleaning up, etc., is carried out; patient is anaesthetised with chloroform, brought to the edge of the table, the legs being supported; the bladder is emptied, the towels put on; the operator introduces his hand into the vagina with a screwing movement of the hand which is already in the form of an obstetric cone, and is inserted into the cervix which is fully dilated. If it is not fully dilated, it is dilated manually, and then membranes are ruptured if they have not already done so. The hand is introduced into the uterus and the presenting part is pushed up; the relative positions of the foetal ovoid made out, the hand passed along the thigh up to the knee, when a small tap into the popliteal fossa flexes the limb, thereby bringing the leg which falls into the lower uterine segment where there is very little of contraction. The hand is then passed along the leg, and the lower part of the leg

and foot are grasped between the thumb and the first two fingers, and slowly brought down. If the presenting part is not well fixed, if there is no marked contraction of the pelvis, and if the liquor amnii is not all drained away, the manipulations are easy. The foot is then brought down by gentle traction; the head which is already lifted up above the pelvic brim, goes up, as the foot is brought down and gentle traction is applied on it. A towel is now wrapped round the foot and leg and gentle and steady traction is applied on the limb till the buttocks and the other lower limbs are brought down and born in succession. During traction on the leg, the hand is passed more and more upwards, as the body of the child advances, first the knee and then the hip are held one after the other and traction continued from those points. The body of the child is also made to undergo a certain amount of rotation during traction, so that, the back of the child is brought anteriorly, and the body transverse to the outlet. A loop of the cord is drawn down and kept to a side to note its pulsations. Gentle traction is continued by grasping the chest of the child with a certain amount of rotatory movement to either side in a downward and outward direction opposite to the shoulder which is going to be delivered first. By this rotatory movement, the anterior or posterior axillary fold is made visible and when this fold is well seen, two fingers are passed just over the corresponding shoulder and the upper arm is brought down with a sweep, when the lower arm comes down from across the chest without any trouble. The process is reversed and the opposite shoulder and upper limb are delivered. Now the body of the child is pulled down a little more, so that the occiput impinges against symphysis pubis and by inserting two fingers of the left hand into the mouth of the child and by lifting up the body and applying traction on the legs in an upward direction with the other hand, the aftercoming head is delivered easily. If the head is high, traction with two fingers along the shoulders is more beneficial and with the aid of fundal pressure from above the delivery of the aftercoming head is easily managed. This method has been adopted as a routine

in several cases and complications of any kind like extension of the arm or head are not encountered.

The importance of fundal pressure being applied only after delivery of the arms, is a point worth emphasizing, because it is a pressure exerted from above on the head before the delivery of the arm that pushes the head down and thereby causes the hands to go up. Fundal pressure must be given at the right time and in the right direction. Pressure must be applied first downwards and slightly backwards, making the head enter the pelvic cavity and then downwards, and forwards, making it pass out of it. On no account should the pressure be exerted on the bladder or on the intestines which may give rise to severe shock, occasionally to rupture of these viscera.

This method does not take consideration of which hand to introduce in utero, which leg to pull down, and in what position to bring the body of the child at first. The hand one is used to, is introduced and which ever leg is grasped easily, is pulled down; the body is rotated and delivered as desired.

Conclusion.

The technique adopted in this hospital has been as satisfactory as those adopted elsewhere, but more simple, less cumbersome and devoid of complications. The question of which hand to introduce, which foot to bring down, does not arise, so long as the operator is sure of which way to rotate the body of the foetus and deliver the breech.

2. Version can be undertaken with equal chances of success in all varieties of parity, provided the conditions are satisfactory and there are no complications.

3. The maternal mortality in version performed as emergencies is practically nil unless the condition is complicated by some other definite extraneous cause which precipitates death immediately after delivery, such as heart disease, etc.

4. Maternal morbidity : Sepsis, both mild and severe, was found only in cases handled outside, or complicated by conditions like placenta praevia, accidental haemorrhage albuminuria or in cases of prolonged labour with failed forceps, then version, occasionally followed by perforation.

5. Foetal mortality in straightforward cases has been the minimum. Cases which have been tackled by other means and version resorted to as a last resource, has been found to yield very unsatisfactory results. Version as a last resort is undesirable in the interests of both mother and the foetus

6. In cases of contracted pelvis with slight disproportion, *i.e.*, cases of vertex with head not fixed where version has been done as a primary operation, the foetal mortality is nil.

7. In cases of uncomplicated transverse presentation, foetal mortality is very low and the operation has its maximum utility. In complicated cases of transverse presentation and other malpresentations including compound, version has been found to give very gratifying results.

An analysis of 115 cases of version done in one unit of this hospital during the last 8 years is appended hereto. My thanks are due to the authorities of the Government Hospital for Women and Children, Madras, for giving me facilities to draw up the analysis of cases.

TABLE I.

Total No. of cases ... 115.			
Full term 104	36 weeks 6.	32 weeks 5.	
1st Para ... 14	6th Para ... 10		
2nd „ ... 18	7th „ ... 4		
3rd „ ... 14	8th „ ... 3		
4th „ ... 16	9th „ ... 11		
5th „ ... 11	10th „ ... 3		

TABLE II.

Maternal Mortality ... 3 cases.

1. 10th Para Vertex. V. D. H. Death on the same day.
2. 8th Para Transverse with Prolapsed arm. P. P. H. 3rd degree. Died on the same day.
3. 3rd Para R.O.P. head not fixed Tonic contraction of the uterus. Forceps to aftercoming head. Perforation. Sepsis. Death on the 4th day.

TABLE III.

Maternal Morbidity.

Mild sepsis 18 cases.

Severe sepsis 4 cases.

Normal Puerperium 90 cases.

Mild Sepsis ... 18 cases.

- | | | | |
|---|-----|---------|---------------------|
| 1. Placenta Praevia | ... | 6 cases | 4 examined outside. |
| 2. Accidental Haemorrhage | ... | 1 case | do. |
| 3. Twins 2nd child | ... | 1 case | do. |
| 4. Failed forceps, version, Perforation | ... | 3 cases | do. |
| 5. Complex albuminuria | ... | 1 case | do. |
| 6. Uncomplicated cases | ... | 6 cases | do. |

Severe Sepsis ... 4 cases.

- | | | | |
|---------------------------------|-----|---|------------------------|
| 1. Prolonged labour | ... | 2 | Both examined outside. |
| 2. Placenta Praevia | ... | 1 | do. |
| 3. Transverse with arm prolapse | ... | 1 | do. |

TABLE IV.

Foetal Conditions.

Alive	...	68
Dead before admission	...	31
Still births	...	14

Dead before discharge of mother	...	1
Child dead before discharge of mother (Prolonged labour, glabellar presn.)	...	1

TABLE V.
Causes of death before admission.

1. Transverse with prolapse cord and arm etc., No. F. H.	...	13
2. Placenta praevia, No F. H.	...	11
3. Macerated foetus	...	3
4. Accidental Haemorrhage No F. H.	...	1
5. Tonically contracted uterus	...	3

TABLE VI.

Still Births (14.)

1. Contracted pelvis in primi Failed forceps and version	...	4
2. Flat pelvis with slight disproportion, diffi- culty in aftercoming head	...	1
3. Flat pelvis, extreme degree, D. C. 3"	...	1
4. Transverse presn., arm prolapsed 8th para, 2/5 diln. (Mother died of P. P. H.)	...	1
5. Pl. Praevia, V para, 2/5 diln., manual diln. of cervix	...	1
6. Failed forceps, version in pl. praevia	...	1
7. Failed forceps, version and perforation, brow	...	1
8. Failed forceps, version, perforation, unduly ossified head	...	1
9. Failed forceps, version, VI para	...	1
10. Difficulty with aftercoming head, woman 3 days in labour, 1st natural	...	1
11. Transverse, arm prolapsed, uterus tonically contracted	...	-1

TABLE VII.

Indications with reference to Parity.

	Transverse uncomplicated.	Transverse with cord or arm pro- lapse or other complications.	Vertex head not fixed.	Malpresenta- tions including compound.
I	4	7	5	1
II	3	9	6	1
III	4	6	7	...
IV	1	7	9	...
V	2	2	8	...
VI	1	...	9	1
VII	1	...	4	...
VIII	...	1	2	...
IX	...	3	6	2
X	...	...	3	...
	16	35	59	5

TABLE VIII.

Foetal mortality in relation to indications.

1. Uncomplicated transverse	...	16
Child alive	...	10
Child dead on admission	...	{ 5 Pla. praevia 4 Macerated foetus 1
Still birth	...	1 contracted pelvis, laborious forceps in a III para, 32 weeks.
2. Transverse, with prolapse cord or arm, or other compli- cations	...	35
Child alive	...	13

			{	Twins, 2nd child, no F.H.	3
			{	Arm prolapse, no F. H.	9
			{	Cord prolapse, no F. H.	2
			{	Albuminuria	1
Child dead on admission	...	21	{	Placenta praevia, no F.H.	2
			{	Tonic contraction of uterus.	2
			{	Hand and breech, no F.H.	1
			{	Macerated foetus.	1
Still births	...	1		Prolonged labour, VIII para, mother died of P. P. H.	
3. Vertex, head not fixed	...	59			
Child alive	...	41			
Child dead on admission	...	7	{	Placenta praevia	6
			{	Accidental Haemorrhage	1
			{	Placenta praevia	1
			{	Failed forceps	4
			{	Failed forceps, version	
Still births	...	11	{	and perforation	5
			{	Tonic contraction ut. forceps to aftercoming head	1
4. Malpresentations including compound	...	5			
Child alive	...	4			
Macerated foetus	...	1			

TABLE IX.

Still births in relation to Parity.

I. 3 Vertex, failed forceps, version with perforation in 2	{	Difficulty in aftercoming head	1
		Hydrocephalus	1
II. 1 Flat pelvis, vertex, disproportion			
III. 3 Tonic contraction uterus, trans. presn.	...		1
Transverse, arm prolapsed	...		1
Moderate contraction of pelvis, failed forceps	...		1

IV. 2 Placenta praevia, failed forceps	...	1
Difficulty with aftercoming head, previous labour natural, 3 days in labour		
V. 1 Placenta praevia, with manual dilatation of cx.	...	1
VI. 2 Vertex, failed forceps, version	...	1
Brow, failed forceps, version, perforation	...	1
VII.		
VIII. 1 Transverse, arm prolapsed, 2/5 dilatation, manual diln. of cx.	...	1
Mother died of P. P. H.		
IX. 1 Vertex, unduly ossified head, failed forceps, version, perforation		
X.		

TABLE X.

Cases of failed forceps, version later on.

1. Contracted pelvis	...	3	Peaforation done in 2 cases
2. Unduly ossified head	...	1	Perforation.
3. Tonically contracted uterus	...	1	do.
4. Central placenta praevia	...	1	do.
5. Brow presn.	...	1	do.
6. Vertex presn., floating head	...	1	do.

Blood grouping and Blood transfusion.

BY DR. D. GOVINDA REDDI, M.D.,

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Prior to the 20th century the classification of human blood into four groups was not known. Though there are several recorded cases of blood transfusion in the earlier centuries, many of them were attended with deleterious and sometimes fatal consequences. It was about the year 1907, that Jansky classified the blood into four definite groups, and in 1910 Moss confirmed Jansky's work. The latter author unfortunately classified Jansky's group I as group IV and *vice versa*. Thus it is important to mention the type of classification used, especially when the groups are I and IV. Though Jansky's classification is followed in most countries, it is Moss's classification that is adopted in the British Empire and India.

Mechanism of blood grouping.

The division of human blood into four groups depends upon the presence or absence of various iso-agglutinins, and iso-haemolysins. Iso-agglutinins are substances that produce agglutination of red blood corpuscles by the serum of another individual of the same species. Iso-haemolysins are substances that produce haemolysis of the red blood corpuscles by the serum of another individual of the same species.

Iso-agglutinins are present in the serum, and agglutinable elements in the corpuscles. There are two iso-agglutinins, A and B and two agglutinable elements *a* and *b*. Blood cannot contain Aa or Bb, as this will lead to agglutination of the corpuscles by one's own serum.

The division of blood into four groups is based on the distribution of A and B and, *a* and *b*, in varying combinations.

Moss Classification.

Group.	Serum	Cells.
I	Contains no agglutinin	Contains agglutininogen <i>a</i> and <i>b</i> .
II	Contains agglutinin B	Contains agglutininogen ' <i>a</i> '
III	Contains agglutinin A	Contains agglutinin ' <i>b</i> '
IV	Contains agglutinins A and B	Contains no agglutininogen.

From the above table it is clear that:—

1. The serum of group I as it contains no agglutinin, will not agglutinate the corpuscles of any other group (*universal recipient*).

The corpuscles as they contain both *a* and *b* agglutinogens are agglutinated by the serum of all the other three groups.

2. The serum of group II contains agglutinin B. Therefore it will agglutinate the corpuscles of groups I and III.

The corpuscles contain agglutininogen '*a*' and are agglutinated by sera of 3rd and 4th group.

3. The serum of group III contains agglutinin '*A*' and are agglutinated by cells of groups I and II, whereas the corpuscles contain agglutininogen '*b*' and are agglutinated by serum of groups II and IV.

4. The serum of group IV contains agglutinins A and B and agglutinate cells of groups I, II and III; whereas the cells of group IV contain no agglutininogen, and are not agglutinated by the sera of any group (*universal donor*).

Occasionally a particular specimen of blood does not conform to any of these groups, and the existence of additional agglutinins and agglutinogens have been suggested from time to time, but not demonstrated.

Hitherto, it was thought that agglutination should invariably precede haemolysis. But now it is definitely proved that haemolysis is not necessarily preceded by agglutination, and agglutinins and haemolysins are separable by heat.

Auto-haemoagglutination and autohaemolysis.

The incidence of blood serum agglutinating one's own corpuscles is fortunately rare. The same is true of haemolysins. There are reported cases of autoagglutination in pernicious anaemia and acholuric jaundice, but of doubtful authenticity. In paroxysmal haemoglobinuria, specific haemolysins develop in the blood serum producing autohaemolysis, after exposure to cold. The same can be demonstrated outside the human body by freezing the serum, and adding blood corpuscles after raising the temperature (Yorke's autolytic reaction). This helps in differentiating from haemolysis in black water fever.

Incidence of blood groups.

The percentage of each group varies to certain extent from race to race and from country to country. The following table shows the average distribution.

Moss Classification.

Group	Incidence per cent.
I	5.42
II	41.38
III	10.36
IV	42.8

Among the Hindus (Indians), Hirshfeld and Hirshfeld have published in Lancet 1919 the following percentages:—

Group 1	... 0.56
Group 2	... 19.0
Group 3	... 41.0
Group 4	... 31.3

It will be noticed that averages for Indians vary considerably from the common averages.

Transmission of Blood groups.

Epstein and Oottenburg have suggested that blood groupings were hereditary and followed Mendel's law. Later, attempts were made to utilise this in medico-legal work. But there seems little field for utilisation of such a speculative knowledge.

Relation of blood grouping to diseases.

The relation of blood groups to malignant diseases, tuberculosis, Wassermann reaction, G. P. I., pregnancy, and mental diseases have been worked out from time to time by various workers. To express it in the words of one of the authors "The reports as yet are fragmentary, inconclusive and, as a rule, do not cover extended series so that the subject as a whole is still *sub judice*."

For safe transfusion of blood the proper donor has to be selected. This may be done in one of two ways (a) blood grouping, and (b) by direct matching of the blood.

Blood grouping.—In this, both the donor and recipient has to be grouped. Stock sera of groups II and III are procured from a reliable laboratory, and later they are collected from the blood of a known group under aseptic conditions. The serum will remain active for months.

(Chloroform to the extent of 1 : 500 may be added to the serum to prevent growth of fungus and other organisms).

A drop of serum diluted with an equal quantity of normal saline is placed at one end of a slide and at the other end only normal saline is kept. The person to be grouped is pricked and a drop of blood is first allowed to drop in saline and next in the serum. (Serum of groups II and III are taken on separate slides and simultaneously matched). With separate sterile kuchs or platinum loops the blood is intimately mixed. After 5 to 10 minutes the slide examined for any agglutination both macroscopically and microscopically. Genuine agglutination is always visible to the naked eye. The reading should be done within 15 minutes, otherwise the film will dry up. If the blood corpuscles are agglutinated with

Serum II and III	...	The person tested belongs to group I.
Serum III only	...	Group II.
Serum II only	...	Group III.
With neither of them	...	Group IV.

Selection of donors by direct matching.

When stock sera are not available, the serum of the recipient is tested with the donors cells and the serum of the donor with recipient's cells (*cross agglutination*).

About one to two c.cms. of blood is drawn from the patient's vein and after adding a few drops of 10 per cent sod. citrate solution, the serum is separated. The donor's blood is tested against this serum using the same technique as described above and using normal saline as control.

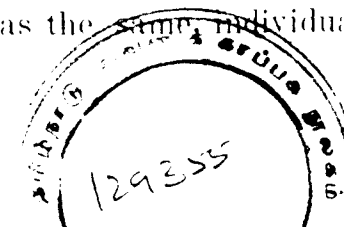
When the donor's corpuscles are not agglutinated by the serum of the recipient, the possibilities are that either

the donor belongs to either the same group as the recipient or Group IV (Universal donor). If he belongs to the same group as the recipient, his serum will not agglutinate the recipient's corpuscles; but if he is of Group IV, his serum will agglutinate the recipient's corpuscles. The risk of donor's serum agglutinating the recipient's corpuscles is little, as during transfusion his serum is greatly diluted and the risk is minimised.

The blood seems to acquire the characters of one of the groups a few days after birth, and agglutinins develop after agglutinogens. So some authors suggest that the mother's blood can be safely transfused to the child within the first few days after delivery.

Points of Importance.

1. One should remember that stock sera deteriorate with time.
2. Rouleau formation must be differentiated from true agglutination. In the latter, the corpuscles gather into dense irregular clumps.
3. When the donor is selected for blood transfusion he should be of the same group as the recipient. When not available, blood from a universal donor (Group IV) can be utilised provided that the blood is greatly diluted with normal saline and slowly transfused to minimise the risk of the donor's serum agglutinating the recipient's corpuscles. (In diseases where the fragility of the R.B.C. is increased the use of the same group is obligatory).
4. The selection of donor should be preferably done by direct matching.
5. Compatibility tests should be made before every transfusion, as the same individual's serum



may vary in the agglutinating titre from time to time, or even occasionally an alteration in the group may occur.

6. The donor should be free from communicable disease, particularly syphilis.
7. The universal donor and the universal recipient cannot be accepted as such without reservation.
8. The donor should be used about two hours after a meal to prevent reactions arising from a chylous plasma.

Duration of life and function of transfused erythrocytes.

The life of the transfused erythrocyte is a matter of uncertainty and seems to vary from 30 to 90 days.

The beneficial effects of transfusion are produced in various ways.

1. It mechanically replaces the lost volume of blood.
2. Performs the usual functions of the blood.
3. Stimulates the patient's haemopoietic system.
4. In recurrent or chronic haemorrhagic conditions, the transfused blood may supply fibrinogen and thus increase the coagulability. The fear of re-inducing bleeding in haemorrhagic conditions due to rise of blood pressure after transfusion, is little as the rise of B.P. is transient and slight, and is more than counterbalanced by the increased coagulability resulting.
5. In toxæmic conditions, transfusion may act by dilution of the toxins or perhaps by actual destruction of toxic bodies. In bacteriemia

the transfused leucocytes may have some direct bactericidal power.

General indications for transfusion of blood.

1. Acute haemorrhage and anaemia, *e.g.*, traumatic, ectopic, gestation, post operative, etc. (shock is not a contraindication).
2. Chronic anaemias to prolong life or to tide over an operation, *e.g.*, pernicious anaemia, anaemias due to malignant diseases, etc.
3. In haemorrhagic diatheses, *e.g.*, Melena neonatorum, haemophilia, and purpuras.
4. In general toxæmias (chemical and bacterial) *e.g.*, bacterial—various infections; chemical—gas poisoning, etc.
5. As a preoperative precaution in bad operative risks.

Amount of blood to be transfused.

This is influenced very naturally by the condition for which transfusion is done. In pernicious anaemia transfusion has been most widely and most frequently employed. Majority of workers think that it is of definite value though it accelerates the occurrence of remissions which is characteristic of this disease. Some advocate the use of 50 to 100 c.c. of blood at short intervals, whereas, there are enthusiasts who boldly use 800 to 1200 c.c. at a time. However the first transfusion should preferably be not more than 200 to 400 c.c. (except in severe haemorrhage and shock).

Kind of blood transfusion.

1. Direct transfusion of unmodified blood is to be preferred.
2. Citrated blood has the advantage of simplicity and is the time honoured method.

3. The use of defibrinated blood has become antiquated and it is attended with frequent toxic reactions.
4. 'Auto-transfusion' is a condition in which one's own blood that has oozed into big serous cavities as peritoneum due to rupture of organs like spleen or ectopic gestation is first filtered and transfused. The question of infection has to be borne in mind.

Reactions following blood transfusion.

Even when no incompatibility was detected by direct matching, reactions have been recorded after blood transfusion. The probable cause for such reactions may be: 'over lapping' of blood groups due to the existence of sub-groups or to the presence of unusually high titre agglutinin content in the blood of 'universal donors'. In addition to the above possibilities, a leucocyte incompatibility, in apparently compatible bloods has to be thought of. Experimentally it has been demonstrated that the leucocytes of the transfused blood undergo rapid destruction liberating a foreign protein which gives rise to this reaction.

Methods for detecting leucocyte incompatibility are described in advanced books on haematology, which may be referred to, by those who are interested.

Many workers have suggested that citrate solution is a possible cause of post-transfusion reactions. This might be true when the citrate is used in toxic doses, but where 0.2 to 0.3 gms. of the salt is used per 100 c. c. of blood, there ought to be no reaction. Also when citrate is dissolved in normal saline solution instead of water the chances of such a reaction is still minimised.

The Apnoea Test

(Abstracted)

"The distinction of psychic tachycardia from all other types whether physiological or pathological, can be made by the employment of a simple physiological test, which so far as the author is aware, has not been used in cardiology hitherto. This test can be termed *the Apnoea test*.

When the heart rate is increased through psychological excitement the stimulation originates in the higher centres of the brain, and is transmitted by the cardiac sympathetic to the heart, where it rouses the pace maker—the S. A. node. This increases the vital activity of the cells in this area, and the process of discharge and renewal of energy in the nodal cells is accelerated. A healthy genetic system transmits the stimuli to the myocardium and the rate is augmented. It is this mechanism which produces tachycardia at the sight of an unexpected telegram, or on the occasion, say, of an oral or medical examination. Now, such a stimulation is not of an essential nature, but is trivial and incidental, and is unaccompanied by any appreciable change in the metabolism. The stimulation of the sympathetic in circumstances like these, which are extremely common is of no great intensity; such an accelerator action is easily overcome and abolished by any more intense inhibitor action through the vagus. Now, we can create a temporary but momentous bradycardial action at will by the simple process of arresting the breathing. This acts as an urgent stimulus to the vagus, the cardiac branch of which is involved, and the effect is to lay down a temporary block at the two nodes in the genetic system. In this simple manner the rate of vital activity in the nodal cells can be decreased. The result is that, for the time being, the heart comes under strong vagal control. Psychic excitation of the sympathetic is unable to make itself felt in the presence of this more urgent vagus action, and the heart thereupon slows.

The technique of the test is simple. The patient is instructed to take a few deep breaths, and when the lung is in maximal inflation

or deflation, it matters not which, the breathing is suddenly suspended for as long as possible, short of distress. During the period of apnoea the vagal action becomes evident, and it is of such strength that all trivial or non-essential sympathetic action on the heart is abolished and the rate is appreciably diminished. The most decided results are usually obtained in apnoea with the maximal deflation.

The reader is invited to study the reactions in his patients to this test and he is entreated to apply it with thoroughness. I have known it to fail on many occasions in casual hands. Observe your patient and do not be content with meagre thoracic excursions seen in the asthenics. Many people in the forties have forgotten what a deep breath means. Also, I strongly advise auscultation when assessing the change in the heart rate, which may be fleeting and difficult to be certain of at the wrist. The usefulness of the test much depends upon the thoroughness of its application, and constant practice will enable the reader to appreciate the varying responses obtained in the different types of tachycardia.

The test will readily distinguish the emotional or psychic tachycardia from all others; that is, it will differentiate between tachycardias which matter and those that do not. The value of the test in the negative sense is also of great importance, for a negative response not only eliminates an emotional cause but clearly reminds us that the cause of the tachycardia must still be sought."

J. C. D.

Bruce Williamson, 1934, '*Vital Cardiology*'

E & S. LIVINGSTONE. Edinburgh.

Meditations.

(By 'G.')

In this hapless life I but pine
Not for gold that doth sickly shine
Nor for a life with pleasures fraught
But alas for something I see not.

In the dark clouds-ful night
Am groping for the Unseen Sight,
An' sick I feel in the sable fold
That cannot in words be fully told.

The human nature I took as guide
Has drown'd in custom's tide,
And in the tradition o' ages past
Man has found a cool resort.

In this ancient caste-ridd'n country
We but fail in th' attempts we try,
Oh! when will come that bless'd day
When all the people 'ill see one way.

Why do all these so-call'd wisemen
Who all belong to a mighty nation
Fight in defence of the curs'd caste
To which in madness they cling fast.

The agelong customs an' habits old
That many think as in our writs told,
Do but stand and make a wall
That hides the things beyond as a pall.

Break, break and make a clear
Way thro' which we can pass fair
In a mighty band as we really are
To the bright goal that's not afar.

When we open our eyes we but find
How ev'ry one on earth is ever kind
Away hence an' break the huge rock
That stands in th' way as a block.

kick-up, and I must have been informed of it beforehand. But as I have now returned home to study, I hope the present company will retire."

Dr. Thomas Dawson was a popular physician. Among his acquaintances was one Miss Carbet who was the richest, the devoutest and also the most afflicted in health, of them all. Dr. Dawson had frequent occasions for visiting her. One day he found her alone, with the Bible before her. She pointed out with her forefinger a few words in the Bible to her doctor the words of Nathan to David, "Thou art the man." He took the hint and they were soon married.

Mrs. Darwin was remarkable for her understanding and refinement, but her health failed her when she became a mother. However by his great care and skill, her husband Erasmus Darwin was able to prolong her life by thirteen years.

Jenner, who did so much to save us from the small-pox scourge, married Miss Catherine Kingscote whose understanding was vigorous and manners elegant. He had implicit faith in her judgment. On one occasion when he was discussing some things with a friend, he said, "Mrs. Jenner can explain all these things; they cause no difficulty to her."

The health of Mathew Baillie, a British Physician, was delicate, and this coupled with his long hours of work made him inclined to be irritable. To prevent this he made use of the following little expedient: when he came home to his dinner-table after a day of fatigue, he would hold up his hand to his family circle and say "Don't speak to me." Then after he had rested a little time and taken a few mouthfuls he would look round and say with a smile of affection, "You may speak to me now."

The marriage of Aberthney with Miss Anna Threlfall was a happy one. He had written to her he would like to marry her, but was too busy to 'make love'. She must entertain his proposals without further preliminaries and let him know her decision by the end of the week.

It is told of a professor that one day he informed his pupils that he should have to miss the next lecture, because he was going away on a matter of business (his marriage) not likely to occur again! Aberthney

did not allow this 'matter of business' to interfere with his lecture at the hospital. He gave it as usual, a few hours after the wedding.

Sir Astley Cooper was also so conscientious, or so unromantic, that on the evening of his marriage-day he delivered his surgical lecture, his pupils not having the slightest suspicion of what had occurred. The wedding was a curiously stealthy affair. In consequence of the death of the lady's father, it had to take place very quietly. So the couple joined a christening party on its way to the church, got married, and then returned as if they had been merely witnesses of the christening ceremony.

In 1840, Sir James Simson (who introduced chloroform) became professor of Obstetric Medicine in the University of Edinburgh. A few weeks before he had removed what had been considered a disqualification for the chair by his marriage to Miss Jessie Grindlay, the daughter of a Liverpool Shipowner. After the election he wrote this characteristic letter to his Liverpool relatives.

My dear mother,—Jessie's honeymoon and mine is to begin to-morrow, I was elected Professor to-day by a majority of *one*. Hurrah! Your ever affectionate son,

S. Y. SIMPSON.

Not every wife is as tolerant of a husband's ruling passion or enters into his pursuits as Mrs. Owen did. Here are a few extracts from her diary:

'Richard spent the evening in examining some of the minute worms found in the muscles of a man. I looked at one or two through the microscope and saw one cut open. I could not get over the smell of the decaying piece of muscle for hours. R. only laughed and assured me that in comparison to what surgeons had often to meddle with, it was quite sweet!'

'Last night a kangaroo (dead) came to R. from the zoo. This morning he dissected some entozoa from the kangaroo. By ingeniously opening these threadlike worms, he has succeeded in making some beautiful preparations showing their almost invisible insides'

'To-day Richard cut up the giraffe which died at the Zoological Gardens'

The Ascetic.

(BY 'G.')

Under the cool spreading tree
Below the star-set blue canopy,
Sits he the ripe old sage ;
My Mother's proud heritage.

His flowing locks are snow-white,
A joyous and pleasing sight ;
On his face calmness smiles
That spreads for miles an' miles.

The flowing robes o' orange hue,
Ending of desires' great clue
Weave around him a wreath o' peace,
For such's that lovely sacred piece.

Riches—Mother o' many a vice
With a smile he doth despise,
And his thoughts never confine
To things for which many pine.

Caste, creed, race and colour
Are to him as to a flower,
To him there's but one race
An' that he calls the Human Race.

In him I find the heaven's touch
Dumb I feel to tell how much,
And in him I find an entity
In tune with Eternity.

Adam as Doctor.

BY

S. BALAKRISHNAN, IV YEAR.

(With due acknowledgments to Hardy).

In his celebrated work *Religio Medici*, Sir Thomas Browne declared that 'the whole world was made for man, but only the twelfth part of man for woman' and that man 'is the whole world, but woman only the rib or the crooked part of man'. And yet Sir Thomas took to himself the 'twelfth part of man' in the shape of Mrs. Mileham, a lady of good family and they 'seemed to come together by a kind of natural magnetism'. The good physician lived happily with his rib for forty years and was a kind father to his ten children. In his earlier years he had said that marriage 'was the foolishhest act a wise man commits in all his life'—but that was of course before he gained experience!

Dr. Cadogan married a rich woman but old. She certainly had no good temper; and after a few months of alternate fits of hate and fondness she began to imagine that her husband was trying to destroy her with poison. One day, in the presence of her husband, when a number of her friends were present, she fell to hysterics, crying, "Ah, he has killed me at last. I am poisoned"! "Goodness"! cried her lady friends, "You have done it, Doctor"!

"What is the matter"? asked the doctor with surprise.

"I accuse you of killing me." cried his wife, imitating a death struggle as best as she could.

"Ladies," answered the doctor with admirable nonchalance, "it is perfectly false. You are welcome to open her at once and you will then discover the calumny."

John Hunter was married to a woman who caused him much vexation by her fondness for society. Hunter, who grudged every moment that took him from his museum and laboratory, returned one day from visiting patients, hoping to have a quiet evening at home for study. He was not a little disappointed to find the huge hubbub and confusion of a grand party. Walking straight into the middle of the reception room, he surveyed the unwelcome guests and said, "I knew nothing of this

The Medical Friends of Dr. Johnson.

BY MR. V. SRINIVASAN, M. A.

Though critical of mankind Dr. Johnson never indulged in or encouraged any censure of any profession and was willing to allow a due share of merit to the various departments necessary to civilised life. "He had in general a peculiar pleasure in the company of physicians," says Boswell in his *Life*. Several of Johnson's friends were medical men. He was himself afflicted all through his life with a kind of melancholy which necessitated constant consultations.

Johnson's was an inquisitive mind and he held all knowledge to be of value. And he picked up a considerable knowledge of medicine. He was fond of chemistry and employed his spare hours in conducting experiments. His contemporaries were struck by the versatility of the man and the celebrated Drs. Cullen, Hope and Monro who had chairs in the Faculty in Edinburgh appear to have had great respect for him. In his *Life of Garth* he paid an elegant tribute to their profession.

"My knowledge of physick I learnt from Dr. James whom I helped in writing the proposals for his *Dictionary* and also a little in the *Dictionary* itself," said he to Boswell, "I also learnt from Dr. Lawrence."

Dr. Robert James was his school-fellow to whose skill he has made an appreciative reference in his *Life of Edmund Smith*. "No man brings more mind to his profession", said the lexicographer on another occasion. His *Medicinal Dictionary* was published in 1743 in three volumes folio with a dedication to the eminent Dr. Mead from the pen of Johnson who appears to have written some of the articles.* "I have in vain endeavoured to find out what parts Johnson wrote for James," says Boswell, adding, "Perhaps medical men may." The two doctors were thick friends. When James died in 1776 Johnson was on a tour to Oxford, Ashbourne and Lichfield and Boswell has described how he received the news of his friend's death: "At Leicester we read in the

* "Dr. Mead lived more in the broadshine of life than almost any man"—JOHNSON.

newspaper that Dr. James was dead. I thought that the death of an old school-fellow and one with whom he had lived a good deal in London would have affected my fellow traveller much; but he only said, 'Ah! said, poor Jamy.' Afterwards, however, when we were in the chaise, he said, with more tenderness, 'Since I set out on this jaunt I have lost an old friend and a young one:—Dr. James and poor Harry (Mr. Thrale's son).'"

In 1784 when suffering from acute asthma which was to hasten his end Johnson wrote to a correspondent that he never thought well of Dr. James compounded medicines. "His ingredients appeared to me sometimes inefficacious and trifling and sometimes hetrogenous and destructive of each other. This prescription exhibits a composition of about three hundred and thirty grains in which there are four grains of emetic tartar and six drops of thebaick tincture. He that writes thus surely writes for show. The basis of his medicine is the gum ammoniacum which dear Lawrence used to give." Johnson had then taken to the vinegar of squills.

'Dear' Dr. Thomas Lawrence was the learned and worthy President of the College of Physicians, an 'intelligent and communicative companion.' "He is one of the best men whom I have known," said Johnson once and in a letter to Warren Hastings he was referred to as "a man venerable for his knowledge and more venerable for his virtue." Dr. Lawrence's son Chauncey was in the service of the East India Company in Bengal and Johnson commended him to the Governor-General's care. We are told that Johnson used the Latin language whenever he wrote to Dr. Lawrence concerning his health.

Of the members of his distinguished circle Levet and Goldsmith were medical men as also his 'much beloved friend' Richard Bathurst one of the gentlemen who started *The Adventurer* in 1752 when *The Rambler* ceased publication. Mention may also be made of Dr. Holder in the Strand and of Dr. Heberden the apothecary who attended on him when he had a dreadful stroke of palsy in 1783. There was besides a Scotch surgeon Cruickshank by name whom Dr. Johnson recommended to Sir Joshua Reynolds when he was an aspirant for the Professorship of Anatomy in the Royal Academy in succession to Dr. Hunter. Under Johnson's roof lived Miss Anna Williams, the daughter of a Welsh physician who came to London to be treated for cataract and on

whom Johnson took pity and decided to keep her with him when she could not be cured of her malady.

Dr. Johnson was ailing from a hypochondriack affliction which he regarded as madness the course of which he has traced for *Rasselas*. As he was ever either gouty or seized with palsy which renders life insipid for him he sought relief in the company of his friends at the Literary club or at the Mitre or nearer home in his last years at the Essex Head. Johnson took particular care of his health and of his stomach. He abstained from smoking and ate well and could not believe how any one who does not mind his belly could mind anything at all. "I never know of a man who relished good eating more than he did," says his biographer. "When at table he was totally absorbed in the business of the moment." He was fond of his appetite. In the last year of his life when during his illness his appetite was satisfactory he wrote to his friend Dr. Brocklesby: "My appetite is still good which I know is dear Dr. Heberden's criterion of the *vis vitae*." Johnson was a fruitarian sparing in the use of liquor, fond of tea, sleep and little children and was in terror of death.

He has evinced great interest in the advancement of medical knowledge. Talking to Dr. Wall an Oxford physician he said: "It is wonderful how little good Radcliffe's Travelling Fellowships have done. I know nothing that has been imported by them, yet many additions to our medical knowledge might be got in foreign countries. Inoculation, for instance, has saved more lives than war destroys, and the cures performed by the Peruvian bark are innumerable. But it is vain to send our travelling physicians to France, Italy and Germany, for all that is known there is known here; I'll send them out of christendom, I'd send them among barbarous nations."

He had read several works of medicine published in his time and offered the following comment on Dr. Barne's *System of Physick* (The author was a Dublin physician practising in London—and a Baronet). "His notion was," said Dr. Johnson "that pulsation occasions death by attrition; and that therefore the way to preserve life is to retard pulsation. But we know that pulsation is strongest in infants

* I hope the authority of the great master of our language (Johnson) will stop that curtailing innovation, by which we see *critic*, *public* etc., frequently written instead of *critick*, *publick*, etc.—BOSWELL.

and that we increase in growth while it operates in its regular course; so it cannot be the cause of destruction." "Soon after this statement," adds Boswell, "he said something flattering to Mrs. Thrale which I do not recollect but it concluded with wishing her long life. 'Sir' (said I) 'if Barry's system be true you have now shortened Mrs. Thrale's life, perhaps, some minutes, by accelerating her pulsation.' This episode of pleasantry is but one of the several wit combat chronicled in Boswell's famous biography.

When Dr. Menus a litigious physician at Aberdeen complained of indignity when he was referred to as a *Doctor of Medicine* instead of as a *Physician*, Johnson expressed himself as follows: "To be disgraced by a title which he shares in common with every illustrious name of his profession, with Boerhaave, with Arbuthnot and with Cullen, can surely diminish no man's reputation. It is, I suppose, to the doctorate from which he shrinks that he owes his right practising physick. A doctor of medicine is a physician under the protection of the laws and by the stamp of authority. The physician who is not a Doctor usurps a profession, and is authorised only by himself to decide upon health and sickness and life and death. . . . In England, whoever practises physick not being a Doctor must practise by licence but the doctorate conveys a licence in itself." This excerpt indicates the great understanding that Johnson brought to bear on the consideration of matters he dealt with.

Twenty months before his death Johnson formed his friendship with Dr. Brocklesby who thenceforth attended on him till his death of which he gave an account later on. A week before that event the doctor visited the patient one morning when low and despondent, and struggling for life Johnson told him that he was dying and burst out in the words of Shakespeare—

Can'st thou not minister to a mind diseas'd;
Pluck from the memory a rooted sorrow;
Raze out the written troubles of the brain;
And, with some sweet oblivious antidote,
Cleanse the stuff'd bosom of that perilous stuff,
Which weighs upon the heart?

To which the physician answered from the same poet :

—— therein the patient

Must minister to himself (Macbeth Act V, Sc. iii).

“ Johnson expressed himself much satisfied with the application ”,
writes Boswell.

Dr. Brocklesby, Dr. Heberden, Dr. Warren and the Grosevenor Street surgeon, Dr. Butter generously attended on Johnson in his last illness without accepting any fees as did Mr. Cruickshank and they did everything possible to prolong his valuable life. But he succumbed, bequeathing in his will to these physicians and Holder ‘ each a book at their election to keep as a token of remembrance.

calcareous changes in the deep fascia, spicules of new bone were seen in the fascia adjacent to the anterior margin of the tibia.

The new bone formation along the anterior margin of the tibia is explained as follows.—Calcium salts are first deposited in the tissue (deep fascia) as a result of its low vitality and low metabolism. These calcium salts give rise to irritation, which brings about a local hyperaemia. Hyperaemia is the stimulus for the proliferation of fibroblasts. Therefore all three factors necessary for bone formation, namely (1) hyperaemia, (2) calcium excess (in this case deposited as crystals in the deep fascia) and (3) the presence of fibroblasts, are present. The colloidal calcium present in the tissue is converted probably by an enzyme action into the complex molecule of calcium-carbanato-phosphate, which is required for the bone formation.

The patient is now able to get about comfortably, but her present improved condition is in measure due to the removal of large amount of elephantoid skin and underlying fat, and the lasting beneficial effects of the Kondoleon's operation can be proved only if the present improved condition continues.

Recently Sir Harold Gillies has reported a new plastic operative method for the treatment of Lymphoedema (*British Medical Journal*, 19-1-1935.) After having failed to meet with any success with Kondoleon's operation or any other method of treatment, he decided to attempt to restore the lymph drainage from legs by facilitating an anastomosis between the superficial lymphatics of the lower limbs with those of the axilla. His theory is that the lymphatic block is in the inguinal glands, and to side-track this block, the ideal method in his opinion, would be to join the lymphatics of the lower limb with a system that is working normally, such as is to be found in the tissues of the abdominal and thoracic walls. To do this Sir Harold Gillies brought the forearm in apposition with the upper and outer part of the thigh, after making two raw areas on the opposing surfaces. Surgical union takes place between the arm and the thigh and the lymph is drained into the lymphatics above the block. Later on the arm skin is transferred to the abdominal parietes in stages, and the arm freed.

I have to thank Col. Craickshank and Dr. N. S. Narasimham for allowing me to report this case.

Editorial Notes.

We are pleased to have in our midst Lieut -Col. Newcomb the permanent principal of the College.

The annual College sports was well conducted under the able guidance of the new Sports Secretary, Dr. Habibullah of the Bacteriological department. He spared no pains to make the function a success. One is glad to note that a good many of the members of the staff were also present. The different event were all well-contested, and each even took place very much in accordance with the time fixed. The judges were much impressed with the 'Disguise Competition.' The Surgeon-General congratulated the winners and was pleased to note that the Wilson Football Trophy was won back after the lapse of many years.

The Secretary in his untiring way brought about another function "The Inauguration of the Jaya Mansion." The Surgeon-General was impressed with the way in which the hostel was managed by the effort of the students themselves. The present accommodation though inadequate is still affording a billet for a few of the needy. Dr. Lakshmanaswami Mudaliar in the course of his speech dwelt on the advantage of a hostel life and the need for a better hostel accommodation. All were of opinion that the provision of a suitable hostel was the concern of the government and the information went round that the work already commenced on the site near the Veterinary College would be soon proceeded with. We can only trust that the hostel will become an accomplished fact at no distant date.

We extremely regret to record two early deaths from among the members of the College and Hospital staff—Dr. T. Krishna Menon and Dr. A. R. Parasuram. The former was connected with the Hospital as one of the honorary physicians, and later in addition as Lecturer in Cardiology; he was also a member of the All-India Medical Council. He did much work to bring the honorary system to the fore-front. He was always popular with the public, professional men and the College students. Dr. Parasuram had just joined his new appointment as Director of the Tuberculosis Institute and had not even finished a couple of months, when he was snatched away from our midst.

* * * *

Preparations are already afoot to celebrate the Centenary of the College in a fitting manner. The sub-committee is busy arranging the preliminaries and has already called a meeting of all the Old Students of the College to discuss measures.

* * * *

Capt. Alexander, I.M.S., has proceeded on long leave to the United Kingdom and Capt. M. G. Kelly, I.M.S., is posted to act in his place. Dr. Krishnaswamy is transferred to the Royapuram Hospital as Superintendent and Lecturer in Medicine at the Stanley Medical School.

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The Impatient Inpatient

BY A. W. MATHURAM SANTHOSHAM.

I saw one day a patient getting into his bed with a deep sigh saying "After all". Evidently he had like any other patient wandered through the upstairs and downstairs of all the buildings of the hospital.

Every one, and most of them to no purpose, is busy in the hospital. So was I. I turned my back and started on elaborate discussions on haemic murmurs. I felt a hefty kick in my back suddenly and when I turned back in fright to know from whom it was I found that it was from the patient still restless in his bed. "Sir! Sir!" he said "I thought you were the boot boy." I entered "patient delirious" in the case sheet and asked him what he was blabbering about. I have given below his explanation verbatim.

I had a dream Sir, you see, I went into a place called 'Modern Antiseptic shaving saloon' for a shave of course. When I went in my name, age, sex, etc., was taken down and I was then led into a room where there was a crowd of young men and women, and more striking than that a grey haired old boss among them. One after another all of them felt my face, rubbed it with creams, placed lenses over it, focused light and worse than that one laughed at me, another looked angrily at me, and still another vehement. I was getting restless and wanted to beat one of them when the boss came near me and said in distinct accents, "my dear man you have your facial hair sprouting out of your epidermis, and so you require a shave." This really annoyed me and so I cried out "go on then, do it quickly." He seemed to take all my vehemence coolly and said "you see I am here only a consulting hariologist." Now he drew himself with pride and holding the open of his coat continued saying "I make my diagnosis here and pass you on to expert hands."

I had hardly time to rebuke for with a bell and a wave of the old boss I was put on a wheeled chair and taken to another room. Here I was again before another crowd and another boss. This new boss happened to be bald headed. The bald head nodded and all the crowd was

on me, ten holding to my hand, ten to my legs, and another ten to my head. In spite of all my struggles to get freed I was tied with my face down, buttock up, knee down, and heel up. Helpless as I was humble I had to be. In a breaking voice I asked them "what are you going to do". "Oh! take it easy" said the blind King bald head "you see I am the anaesthetist. By special methods I am going to make your face alone senseless.--" The rest I did not listen too.

Now I heard another cracking old throat which was surely not the anaesthetist's saying "you see ladies and gentlemen, the scraping must be undertaken only by a specialist for obvious reasons, and equally importance is the soaping because of the danger of spoiling the eyes." This new room in which I found myself was the soapist's room as I understood from the talks.

Then I went through the various specialist's hands the scraper, shampooist eve, and as the last process I came on to the resurrectionist—blessed be his name—who freed me of my bands and made me feel I had a face.

I got out of the place thanking nobody and cursing everybody including me and came across a bay in front shouting "shoe polish." On his persuasion I allowed him to apply the brush. But this fellow after finishing one leg asked me for a quarter anna. "Do this leg" I said, and showed the other. "The other boy for it, sir" he said, "I am a specialist only of the right leg." This was the boy who was the victim of all my anger and I gave him a mighty good kick, but—

* * * *

But I happened to be the victim.



JAYA MANSION, FRONT VIEW.

HOSTEL, SPORTS, Etc.

The Revolt of the Reviving Faith

BY T. JANARDHANAN,
General Secretary, M.M.C.A.

"Cursed be the social wants that sin against the strength of youth!
Cursed be the social lies that warp us from the living truth!
Cursed be the sickly forms that err from honest Nature's rule!
Cursed be the gold that gilds the straighten'd forehead of the fool!"

Tennyson.

"I assure you that my honourable colleague here and my Government fully realise the importance of settling finally the question of the site for the new general hospital, in order that we may carry out the very necessary development *including the hostel* which will help much to remedy the long felt want of more efficient equipment for the college. I cannot give you our final decision to-day but will give you the assurance that I shall make every endeavour to secure a settlement of this question before I lay down the reins of my office as Governor of Madras."

Lord Willingdon.

(On the occasion of the prize distribution in 1923 at Medical College, Madras).

We have still faith in His Excellency's assurance and hope ere long, before His Excellency lays down the reins of his office as Viceroy of India, the vision he portrayed as Governor of Madras will be an accomplished fact. Faith never dies. But before that faith fails it is reasonable that it should revolt with the hope that this war for peace will bring in victory.

The hospital scheme is nearing completion but the retrenchment commission and the finance committee has postponed the construction of the hostel for our college indefinitely. Each one shoves the responsibility on to some one else. Jack points to John, and John in his turn dishes it out to James. James does the same to Joe. Thus the cruel

joke is maintained and each one knows in his heart of hearts that this is a game of sheer bluff and make belief. But is it fair? Is it just? The milk of human kindness is not in it. Having sardonically enjoyed it one comes to the conclusion that Jesus might have preached the sermon on the mount in vain. When we ask you a favour which you were not likely to grant, if you have any spark of humanity say 'No' as an act of justice to us. If you give us an indefinite answer and hold out the idea that you may meet our claims when you have no thought of doing so, you are uttering a deliberate falsehood. You are holding out hopes which are not to be realised and prevent us from using all our energies in another direction. If you mean a 'No' be manly enough to speak it, yet generous enough to refuse with a kindly courtesy.

Human beings crave for sympathy, and students being human, seek sympathy from those above them. When it is not forthcoming a further step has to be reached and youthful pugnacity comes into play. Youth takes up the challenge as it feels called upon to show that it is no factor to be trifled with or displeased.

It is unlikely that men with flesh and blood will submit in patience to this treatment longer than it is absolutely necessary. It is all very well to talk of initiating all sorts of benevolent schemes to ameliorate the lot of poor students. They are all very good so far as they go but they don't go far enough. Therefore mere tinkering with the problem wont do. The State should respond nobly to the crying need of the children. Once you take in young men into your colleges, the world expects you to treat them with ordinary decency and hospitality. That is only what an elementary sense of duty should demand.

You have trained us in personal cleanliness, sanitary living, proper dress and prevention of diseases. We are proud of our knowledge, proud of our *Alma Mater*, but never proud of our own physique. This we fight against when we court sleep without sleepiness; eat when we are not hungry, drink when we are not dry, work when nature rebels against it, and wear ourselves out with excessive fatigue. As regards the predisposing causes, the health officer would put in insanitary housing conditions as the foremost. Surely free air is denied to us, but ample opportunities are given for a medico to lower his vitality and to catch infection. Consequently one breaks down during or immediately

after his course in the college and the death role among the male students is increasing every year. With the gradual and increasing strain on his health, is added the burden of finding his own food and shelter not to speak of his fees.

Consequently he has no time to concentrate on his study and gives up the prizes and the blue ribbon to their more fortunate comrades of the other sex, who though have a overcrowded hostel without even a compound wall they derive all the advantages of an hostel life. Surely, the age of chivalry is not yet dead.

No issue of our College Magazine is without reference to a lost colleague. My predecessors in office seized every such opportunity in making every calamity a whetstone to courage, and appealed to the powers for shelter. But their attitude was almost uniformly hostile. No one can say how many more are waiting to be gripped by the hands of grim death, before the Gods at Olympus awake from their slumber.

The young man minus his youthful vigour which has drained to its limit by having lived in the slums of Madras taking food wherever he lives after a most tedious time at the college and the hospital is sent out to face life and to advise the public on points of health and sanitation. Our Councils and Conferences, official and non-official deal with almost every other aspect of human life and nobody has questioned this iniquity. Our Professor Lt.-Col. Wright after his recent return from his visit to the far East in a lecture at the Madras Rotary Club said that both the Western and the far Eastern countries have advanced much in their civic conscience while Madras lags far behind other countries. He rightly remarked that 'Madras is the Greenwich of sanitary latitude'. May I say that the future apostles of health and sanitation trained at this Greenwich laboratory—Madras Medical College—also lag far far behind in their own health and sanitary living than their kind in both the Eastern and the Western countries? Perhaps, as the constitution approaches more and more to the responsible type, and the legislatures become more and more sensitive to public opinion, it would not be possible to carry things with a high hand and in defiance of public opinion.

The life of a medico one probably figures as smooth and quiet, but on closer and more careful examination, it will be found like a sea

foaming with tempests and boiling with whirlpools. Navigation under such conditions is indeed difficult. In this city there is a vast concourse of youngmen assembled from all parts of the presidency. They come together as adventurer in the pursuit of a career. Some of them bring into the metropolis a reputable character and correct moral principles, others come to give loose to evil propensities which in the country and under restraint of home were kept in some subordination. When these characters mingle, in a large and bustling city and allowed to run their own lodges with no supervision or useful advice one class will be naturally be exposed to the reductions of the other. Many such lodges are more on house where the inmates get easily accustomed to the use of stimulants and consequently boozing is a common form of weak end revelry. To one who moves closely with the present day medico, it will be no news if I be permitted to say that a good percentage of the medicoes are adepts in all the vices that corrupt society. I tender an apology for such a bold statement. Truth is never palatable especially to those it may concern. During the short period, I had the honour to be the General Secretary of our College Association, I had the privilege of arranging many a social both official and non-official. In every such functions friends eagerly ask whether boozing also is allowed, we shall ask ourselves what this mania is due to? Is it not a force of habit, who is to be blamed? Surely not the students who has become a victim to these natural temptations. If our professors had been exposed to similar temptations during their student days which fortunately was very few then, most of them would not have occupied the coveted chairs they occupy with dignity to-day.

The pioneers in wickedness, the practised and hardened crew, who have abandoned themselves to the indulgence of their passions lie in ambush, to seize upon their victims and to hurry him to ruin. Hundreds of such with a comparatively plausible exterior may be found in the streets, shops and alleys of our present day city wherein these lodges are situated practised in the arts of temptation they make a gradual advance upon the unsuspecting youth and insinuate themselves into his confidence and friendship the first sacrifice of conscience is like Samson giving up his locks. How many a young man has fallen a prey to this process of temptation? How many with prospects of usefulness and success and with a character which might have insured respect, have by listening to the voice of the seducer forfeited the con-

fidence and fallen under the pity and contempt of community? With a wreck of his own character and prospects he has become a source of mortification to his own friends to whom he runs for help monetary or otherwise which he is in dire need always and perhaps brought down the grey hair of a parent with sorrow and grief to the grave. The rapidity with which the present day medico makes shipwreck of health, character and conscience, is a melancholy proof of the force of temptation and the prevalence of youthful depravity.

Had it not been for their incurable lethargy and easy going natures they would have long ago revolted against the lethargy of the government. In their abundant faith in the hope given to the medico by ministers, governors and other dignified officials, they even brushed aside the advice of their own professors and patrons. How else could one account for the brushing aside of the following advice by one of the fathers of our Association whose deep insight into the problems of our proposed college hostel was revealed as early as 1926. What he felt a decade back is astoundingly true to-day.

"Turning now to the need of the hour" wrote Lt.-Col. Pandalai in our College Magazine of March 1926, "one hears all round bitter complaints of the want of a common room, restaurant and a hostel for students. It is too late in the day to descant on the advantages of a residential College for medical students. Much that is valuable in life and particularly youthful life in training for the most unselfish of all professions in the world is denied to our young men for want of residential quarters close to the College hospital. We are firm believers in self help and are convinced that something needs to be done at once in order to make a beginning. May we suggest that our students start a hostel fund and themselves set apart a small fraction of their monthly allowance as a fixed contribution to the fund. And instead of spending their holidays in empty amusements they might make house to house visits in their respective towns, taluks or villages and collect as much money as possible for the students hostel fund. If they thus prove their earnestness in the matter, the public and the Government would soon hasten with their contributions and the long waited hostel would be an accomplished fact in a few years. In addition to helping themselves and the earning the gratitude of future generations of medical students the work above suggested affords excellent training

in social service which would stand in good stead in after life as leaders of society."

Lt.-Col. K. G. Pandalai.

One is tempted to slightly alter Tennyson and write.

"For he dipped into the future, for as human eye could see.

Saw the vision of Our Hostel, and all the wonder that would be."

No prophet, it is true is honoured in his own country much less in his own time. Nevertheless we of the present time are the fortunate witnesses of a reviving faith in the supreme potency and capacity for good in self help. That call to action made by Col. Pandalai in 1926 is repeated again by another father of our Association Dr. M. R. Guruswami Mudaliar at the General Body Meeting in July 1934 on the following words:

"It is really inconceivable how our College managed to exist without an hostel for nearly 100 years. It causes not a little inconvenience to moffusil students who are to wander about in the city for proper lodging shifting from place to place for nearly 6 years. As a result in the best part of their lives they fall a prey to the ravages of many a disease. It is a pity that the Government fails to understand that if at all any College requires an hostel as an immediate necessity, it is the Medical College which attracts students from all over the presidency—nay from all over India."

He impressed on the students that no dignity is lost if they go about with a begging bowl collecting money.

"Even in England" he said "students and nurses go about in the streets on what they call as hospital day."

The present generation of students hear the new and the old call together reverberating in their ears, and tries to realise it, but as yet failed to do so, for so much strength has yet to be given to this task, that but little is left ready to answer the call. But it will be answered for how else could all this labour have been accomplished had it not been upheld by the strong promise of the inward call? Time moves on, fate is not quiescent. New times bring new events. New ways are set up and we are determined if things are not shaped according to our wishes to try conclusions of one sort or another.

Jaya Mansions though has limited accommodation affords the wandering medico ample shelter near at hand. Yet it lacks the touch of authority and the dignity of recognition consequently yet there is the absence of watchfulness, there is all the inducements to extravagance. It is not easy to control and maintain order among its 50 inmates without any loss to the proprietor and the fair name of the College Association. The hostel needs though not an official warden, at least a prefect as is being done in Grant Medical College Hostel, Bombay, and in other places. He should have sufficient leisure to supervise the daily working of the hostel. The General Secretary of the College Association has got already a fulltime work by way of conducting the Magazine and other Association work in addition to his legitimate work as a student. It is improper to add any responsibility to him however slight it may be in the actual functioning of this hostel.

Soon after the exhortation of Dr. M. R. Guruswami Mudaliar students poured in to give their names as volunteers for begging. It entailed on me a great responsibility. I personally felt that the time was not quite opportune and directed the attention towards the successful functioning of our temporary abode. In the meanwhile attempts were made to get at the Chief Minister to preside over our graduates' reception to hear his final decisions over our hostel, unfortunately he could not preside. We waited to hear our kind Surgeon-General twice. True he felt one with us and painted a black picture and he even said that there is much scope for a private college and an hospital in Madras implying evidently why not an hostel. The kindly proprietor of 'Jaya Mansions' is willing to extend his buildings to give accommodation to more students if only the college authorities or the Government come forward to run the hostel till the permanent one is erected. If even such a private generosity should be allowed to pass unnoticed, it is nothing short of callousness.

Must we stop with this temporary hostel or is there any practical salvation for a permanent one? Yes! says the voice of common humanity. In all ages there is prayer and a response. Now, we feel the time is opportune and as in all things medical the youth expects the elders to give a lead. The old students of the college owe a great deal to their *Alma Mater* and no fitting honour can be done to the college during the coming centenary celebration than to provide an hostel for

the college without which it is a heart without a joy, a face without a smile, a world without a sun. If the proposed centenary fund by the medical college council be utilized for the building of an hostel, the students will do their best to collect as much money as possible to add to the fund. Our respected General Editor Dr. Thambiah has times without number impressed on me that he alone could collect for such a noble cause at least a lakh of rupees from the old students if only he could he spared six months' holiday.

Members of the Medical College Council! Every one is enthusiastic; the spirit is there but the occasion never before arose to harmonise them. A fitting time has come for you to release your students from the grasp of the destroyer. If even you are going to be apathetic towards us, your course will give a death blow to many a father's hope and a death pang to many a mother's heart. It will deprive of your country of services which might adorn her annals. I earnestly beseech you—members of the medical college council—to bestow your calm and careful consideration on this matter of vital importance. You can take time and we know matters of this kind need time. But at the same time remember that the slow and patient medico is stirring and his voice will become more and more insistent of his claim for shelter. If only you show your gesture that your fund is going to be utilised for building a centenary memorial hostel, we for our part ready to solicit public support. The encouragement by the old students while the present students are struggling for the accomplishment of great ends would be a great inspiration to hear us onward with redoubled speed to triumphant success.

Comrades of the medical college! One moment sometimes offers what whole ages might have wasted in soliciting in vain. If therefore such a nice and delicate crisis as this should court your attention be bold! be vigilant! be resolute! never sleep till you have made the most of it. You should be brave enough to overcome any obstacle presented, hopeful enough to scout, rout and annihilate discouragements, patient as job and persistent as a bull-dog's clutch. Our mission in the college should be to have a living in the college, as a means of securing a living in the gloomy future. To be dependant for a living on the whims or caprice of another, is the mark of an ignoble mind. Let us not expect any crumbs to be thrown at us at leisure when we are bubbling with pious intentions and demand what is our due.

Lady comrades! Some of the finest type of women are found in the ranks of social workers. Women dedicate themselves to this work of relief—a profession that calls out all that is motherly in you. You know that not a few homes have been rendered desolate by the death of young men in our college and many more have their health shattered. You can more easily educate public opinion and persuade the public to come to our views and you can join hands with us in our fight for a home wherein we will have regular food and shelter and call it our own.

So, let all of us during the coming summer vacation make an organised effort to collect as much money as possible in and about our homes in the different parts of our presidency and before the college opens again we shall hope to have collected sufficient amount to build our own hostel. There are many philanthropic gentlemen throughout our presidency, some of whom might be your very best friends, you can appeal to them to put their hands deep into their pockets for a noble cause. India is the home of co-operation where everything is built on 'live and let live' policy. It ought not to be impossible to organise the public opinion. If private enterprise is not sufficiently forthcoming there is no reason why a public spirited citizen should not finance a long felt want without any expectation of a return in the same way as he now endows a hospital or a university. So let us all

"Hold aloft the light and stand firm to the post,
Till all wandering souls have reached their goal in safety.
Service brings strength and renewed life,
Love cures all weariness.
And faith, the shining jewel of life performs all miracles."

Then comrades! come, rally
The last fight let us face.



Photo taken on the Inauguration Ceremony of "Jaya Mansion" on 5th February 1935.

Medical College Students' Hostel.

5th February 1935.

INAUGURATION OF THE HOSTEL.

It is indeed a great achievement on the part of the medicos that inspite of the Government denying them a roof to live under for the last one century, they have at last been able to create one (though a fraction it be) for themselves. Major-General Sir Frank Connor, Surgeon-General, was the other day at the Graduates' reception advising us all about the possibility of running a private hostel and for the matter of that a private hospital even. We are glad we could show that such a thing is not far beyond our scope and by this achievement we have proved with facts the urgent need for a hostel.

The hostel was inaugurated by Sir Frank Connor on 30th January 1935 before a large and distinguished gathering of officials, non-officials and students when Lt.-Col. Clive Newcomb, Principal, presided.

After tea and prayer Lt.-Col. Newcomb in the course of his opening remarks, observed that he considered it enterprising on the part of the students to have started a hostel on their own initiative. The location was not perhaps ideal, but he was sure it would be a most successful venture.

Mr. T. Janardhanam, General Secretary (M. M. C. A.) made a statement about the genesis of the hostel:

THE GENESIS OF OUR HOSTEL.

MR. PRESIDENT, LADIES AND GENTLEMEN,

The history of our fight for a permanent hostel for our college students is a long one but the history of this hostel, the inauguration of which we are celebrating to-day, is indeed very short. You all know too well the long-felt want of an hostel. That consciousness of something wanting has slowly ripened into chronic unrest and now it has

reached an acute disturbance. You all will agree with me that our college students were denied even the irreducible minimum of civilised life. But we found it too hard to reason with those who would not listen. No greater outrage to our sense of progressiveness could have been offered than to deny us a roof to live under. The fact that I had the painful duty of arranging more condolence meetings than even the business meetings of our college association, shows the state of life we are at present leading.

To-day, we feel our own biceps for adequacy to remedy the want. This remedy is merely a palliative, which may suppress the malady; it cannot prevent it nor can it effectually or eternally cure it. Our distinguished president is both the father and the mother for this hostel scheme. While this building was still under construction last year, Lieut.-Colonel Newcomb, our president at a general body meeting of our college association held in March 1934, just before his departure to England on leave, suggested to the students that this building will be available for an hostel if they like it. During the last summer vacation, Mr. Jayaram Nadar, the proprietor of this building approached me about the proposal of running an hostel. I felt that the question of running an hostel needed a more responsible body than that of the college association. So in July 1934, as soon as the college re-opened, I approached our acting Principal, Lieut.-Colonel Wright. He was very sympathetic towards our demand for a permanent hostel, but refused to have anything to do by way of arranging this building for a temporary hostel.

Now the duty fell on us. In the same month at the general body meeting of our college association Mr. Nagappa Alva the present student warden of this hostel moved a resolution requesting the President to make arrangements for running an hostel at 'Jaya Mansions.' The President of the meeting, Dr. Guruswami Mudaliar commending the idea of running an hostel at 'Jaya Mansions' said as follows :—

'True that the building is wedged between the railway line on one side and the tram line on the other, but let us be satisfied with a footing to start with and then fight out for a real hostel. If the Government is even then not willing to agree to our proposal then certainly the remedy is with you.'

He also assured the general body that he will make arrangements for the hostel if at least 30 students are willing to take rooms. In a few days I got the required number of names and so with the help of Dr. Lakshmanaswami Mudaliar, one of the Vice-Presidents of our college association who played a great role in the actual working part of this scheme, the building was arranged. The proprietor Mr. Jayaram Nadar was very accommodating to the various concessions we asked for. He agreed to levy rent only for the occupied rooms at the same time promised us not to allow other college students to occupy the unoccupied rooms. The furniture and the accommodation he has provided us, is not equalled by any other hostel in this city. We are ever grateful to Mr. Nadar for his generosity.

The hostel began on 1st September 1934 and students were allowed to join the hostel after paying Rs. 40-0-0 as caution money with Dr. K. S. Viswanathan, the honorary treasurer of our college association. The students were very slow in joining the hostel in the beginning and it was found very difficult to get in a contractor to run a mess with not even ten students to begin with and at the same time to keep down the monthly mess charges.

Even now, with the hostel full to its brim, the proprietor, myself and the student warden all jointly and severally feel that at certain times we are unable to face many practical difficulties in the actual working of this hostel. I feel that this will continue to be so until and unless our Principal takes some early steps to see that the working of this hostel becomes a part and parcel of our college activity. I hope an arrangement will be effected at least before the beginning of the next college session.

This hostel is certainly a positive achievement of self-help and it ranks high as it has rightly aroused enthusiasm. This has done its share in stirring the age-long peaceful pathetic contentment of the medicoes to activity, so that he may share the great heritage that is in prospect soon. With that hope we enter on our new life in a spirit of humility and we pray that we may be given through divine grace and your goodwill the strength and wisdom to carry on this noble work to do our little bit for our college we love so well and for the dumb medicoes whose voice is so little heard and so little cared for.

Dr. K. S. Vishwanathan, Treasurer (M. M. C. A.) gave an account of the financial condition of the institution.

Mr. K. Nagappa Alva, Student warden, next read the report of the institution.

HOSTEL REPORT.

MR. PRESIDENT, LADIES AND GENTLEMEN,

I have great pleasure in extending you all a hearty welcome. Our hostel is one of the first of its sort to be run by the students themselves. The impetus for such a one was given by our popular Principal who towards the close of last year suggested the establishment of a hostel by the students in the 'Jaya Mansions.'

When, in the general body meeting held in July 1934 I moved for the conversion of 'Jaya Mansions' into a hostel it was Dr. Guruswami Mudaliar who as the President of the meeting assured me strong support. From then he took great interest in seeing that it is regularly formed and we have to thank him very much for this. We could not have proceeded any length but for the great benevolence of Mr. Jayarama Nadar the proprietor of this mansions who was kind enough to reserve both the flats for only Medical College Students and to give all possible help for establishing a mess, etc. Under the guiding hand of Dr. Lakshmanaswami Mudaliar who had been a source of advice to us time and again, our energetic secretary spared no pains to see that the hostel is properly established. Our thanks are in no less measure due to Dr. Vishwanathan, Honorary Treasurer of our College Association, who has kindly taken up the business of collecting the hostel deposits.

The hostel was opened on the 1st of September 1934 with 11 members most of whom with the patriotic spirit of joining the Medical College hostel were run-aways from some local hostels. It is no bad credit to us that inspite of severe criticism about its opening, situation and stability from quarters high and low we have been able to increase our numbers day by day. There are now 49 members and 2 associates. I think it is a matter of pride that in a short space of time we could get our hostel filled up completely.

Medical College Students' Hostel

The first general body of the hostel framed certain rules and regulations. A student warden was put in charge of the general management of the hostel and in that capacity I stand before you now.

Our first mess had been a vegetarian one. The number of non-vegetarians being very high we had to start in course of time a second mess for the carnivorous. Only cosmopolitanism exists in our messes and there is no place for any purdha system. The messes are being run by a contractor and each mess is controlled by a committee.

There are 28 single rooms, 8 double rooms and 2 treble rooms. Room rent per single room is Rs. 10 including furniture light, water, etc. Rs. 18 per double room and Rs. 24 for a treble room. Mess charges in the vegetarian section per month is Rs. 16 and in the non-vegetarian section is Rs. 18-8. Monthly dues of a vegetarian per month comes to approximately to Rs. 28 and that of a non-vegetarian about Rs. 30.

As for our social side our reading room was opened on the very day as the hostel with a daily and a weekly. In course of time with our scanty funds we were able to add indoor games in the shape of carroms and chess. We eagerly look forward for a few donations from those present here for the better equipment of our hostel. Will it be too much on my part to expect some donations being declared this might alone?

Our examination results were altogether satisfactory in keeping with the general percentage of results in the college. It is also a matter of credit that one of our members Mr. P. S. Janardhanan could achieve the distinction of being the only regular student to pass the preliminary F. R. C. S. examination.

Turning to our athletic activities our hostel possesses many members of our college teams. We are sending a team for the inter-hostel tennis tournament at King Hostel. There was an inter hostel carroms tournament and prizes are being awarded.

The general health of the members has been very satisfactory as can be made out from the few calls which Dr. Guruswami Mudaliar our hostel doctor received.

Coming to our finances we tried to raise a common fund by way of monthly subscriptions and succeeded in realising about 100 and odd rupees. Out of this we were able to provide ourselves with indoor games and other necessary amenities. The net fund after all expenses comes to about 50 rupees. A part of it goes to the days function. What remains would be but a very small sum and something has to be done, and it would not be a hard job if only we count on your willing co-operation.

It is most unfortunate that the finance committee has thrown aside the idea of building the Medical College hostel. The necessity for such a hostel has been stressed on many an occasion and in many a place and it needs no more stressing. We all earnestly look up to one thing. It will be great act of kindness to us by the authorities if they take up the running of the present hostel until the new hostel comes into existence. We hope and entreat our respected Principal and Surgeon-General to see that the Government is impressed on the immediate necessity for a hostel and try to get it into existence soon.

May I also suggest that the coming centenary celebration of the college may see the laying of the foundation stone of the Medical College hostel.

I thank all the members of our hostel for their happy co-operation without which it would have been impossible to run on smoothly such an unsettled and unregulated hostel as this. It is my sincere wish that the authorities see that the difficult and troublesome business of collecting monthly dues, etc., the burden of which has fallen on our shoulders is transferred to more responsible quarters.

Ladies and gentlemen, I suppose to-night's function gives you a glimpse of this home of a homeless set of medicos and I think it is on bad comparison if not better than the home of our sisters provided by the Government at the other end of this very high road. I request you all to be kind enough to take a keen interest in us.

Sir Frank Connor then formally inaugurated the hostel. He said that for a moment he hesitated to attend the function, as he feared a portion of the blame for the absence of a hostel building for the Medical College, would be cast upon him, and it would be better if he were present to defend himself. Continuing he said that a few days

ago he went along with this Principal and the Superintendent to inspect a possible site for a hostel. The news might cheer them, for it might mean bringing the date of the construction of a permanent hostel ten years nearer. He hoped that the Finance Committee would be stimulated to action. His predecessors in office and he himself had done everything the possibly could in the matter. It was creditable he added, that students had put their shoulders to the wheel and started a hostel of their own. When the scheme for a permanent hostel matured, the experience gained would be of great help to them. The students, he said, were fortunate in having secured accommodation in a good building very near their College. "I am happy to be present at this function," the speaker concluded, "and I give the hostel my blessings."

Then, Mr. S. P. Jayarama Nadar, owner of the "Jaya Mansions" made the following speech :—

LADIES AND GENTLEMEN,

I am very grateful to the members of the medical college students' hostel for their kind invitation to attend and participate in this inaugural function of the hostel. Col. Newcomb and Dr. Lakshmanaswamy Mudaliar have taken great pains to help their students and I am sure, have rightly earned their gratitude and affection.

As for myself, I must confess that when I originally thought of putting up this building—I looked upon it as an investment for my money which while fetching me a reasonable return would at the same time add to the beauty of our proud city and serve the commercial needs of its citizens. But during the construction, a few students of the medical college suggested that if provisions could be made in the building for boarding and lodging of students, it would meet a much needed want of theirs. Thanks to my architect, the first and second floors were altered to suit the purpose. At the pressing request of some of the students, I consented to start and manage the hostel for them and it has been running for the past four months, I hope satisfactorily. I have very many calls upon my time and I find it increasingly difficult to continue to give the hostel my personal attention. I hope and wish that the management of this hostel will be taken from us and I will be given the relief which I need very much.

I am thinking of extending the hostel accommodation to a considerable extent and I hope it will meet the increasing demand of the students. I have ample space adjacent to this property.

I feel sincerely thankful that I have been able to serve the needs of the medical college students to some extent. I am grateful for the kind reference to me by Mr. Janardhanan and Mr. Nagappa Alva.

Dr. Lakshmanaswami Mudaliar, addressing the gathering said that the students had every reason to feel proud of their achievement, and to justly ask for the recognition from the hands of those who had the right to do service to them. The question of a hostel for the Medical College students, was taken up several years ago at a meeting of the Senate in 1924. When he was a junior member of the body, he sent notice of a resolution that the Senate should take into consideration, the necessity of a hostel for the students. Due to certain impediments in their way, little had been done in that direction. The credit for starting the hostel went to them alone. Continuing, he said, that the real life of students did not begin and end in the college and in the hostel alone but existed outside those spheres. Real valuable lessons of self-help, brotherhood etc., could be learnt both inside and outside the college and hostel. Proceeding, he observed he was glad that there was a cosmopolitan system of dining. It was a matter for congratulation that the first hostel established by the Medical students, would be an object lesson to others who might endeavour to start such hostels. Concluding he said that another aspect of the hostel life was that they had students representing the civil and military departments. He congratulated them for the spirit of comradeship that they had displayed in running the hostel. He hoped that they would cultivate it more and more, for the good of the country and for the humanity in particular. From that point of view hostel life was a great desideratum. The hostel had brought them nearer to each other and they had every reason to be proud of their efforts. As the Centenary of the Medical College would be celebrated ere long, he thought, he could safely say that they had to feel proud of the college and of the achievements that they had inherited in the past. He hoped that the hostel life would make the students cultivate co-operation which was a noble virtue. He wished the institution all success.

Medical College Students' Hostel

Lt.-Col. Newcomb winding up the proceedings congratulated the students on their enterprise in organising a hostel and running it successfully. He also congratulated the owner of the building for its grandeur and magnificence.

After a short and selected programme of variety entertainment the function came to a close.

Athletics.

FOOTBALL.

Bangalore Tour September 1934.

The Medical College Football XI played 4 watches in Bangalore. We were handicapped from the start by having three of our players with us for the tour. Further, two others were unable to play in the match against the "Blues", due to injuries, and, considering we only lost by a margin of one goal, is a credit to our team. Unfortunately we have no excuse for losing to St. Josephs College who proved themselves superior. The "Crescents" gave us a good game, and it was a struggle for us to maintain to the end the lead we had gained. The Crescents proved easy victims.

Taking all into consideration, our College Football XI put up a very creditable performance throughout the tour to Bangalore.

The following are the results :

St. Josephs College	4—2	Lost.
Crescents	2—3	(We won).
B. W. F. C.	2—0	(We won).
Blues	1—0	Lost.

The team was : Periera, B., Paulose, Oomen, McMurray, Hull, Orton, Thomas, Kuruvilla, D'Costa, Cullen, Haridas, and Dr. Balan.

Reserves.—Hogg and Stephens.

L. G. HULL,
Football Captain.

HOCKEY.

Our Hockey "Eleven", winners of the M. U. C. hockey tournament of 1934, acquitted themselves very creditably during the tour to Bangalore in September last. The first fixture was against the Mysore University, the game being played on their grounds in the "city." Our players could not get accustomed to the hard ground after playing on turf in Madras and spent the greater part of the game in settling down.

Satur opened the scoring for us but our opponents equalized and scored again to lead by one goal ; it was only during the last five minutes of the game that our forwards showed a trace of their old form, Satur equalizing and C. Pereira giving us the lead, the final score being 3-2. In this game D'Costa and L. McNamara were unable to play, their places being ably filled by Gibson and McMurray.

The next game was played on the Police ground against the Y. M. C. A. and though it was a tough match we were undoubtedly the better team the final score being 3 goals to 1 in our favour. Satur and C. McNamara were the scorers.

The last game was also played on the Police grounds against the Redoubtable St. Joseph's College Club team, Champions of Bangalore and we were unlucky to draw, 2 all. The scorers were Satur and C. McNamara.

We have had a very successful hockey season this year, having won the M. U. C. gold cup and retained the Intercollegiate Trophy. The team is to be congratulated on the sporting spirit they have shown in all their matches and we hope to repeat, or if not, better the performance in the coming season.

E. J. GOODSIR CULLEN,
Captain.

CRICKET.

With Mr. S. V. Thiruvengkatachari, the Presidency wicket-keeper, as our skipper, we the cricketers of the College XI had a splendid time this season. With his broad smile and cool head, full of resources to guide and lead us we had little difficulty in tiding over the many critical and difficult situations so very common in such a great game as cricket.

Hogg, Madhava Rao and Sivaram are the three new comers to the College team this year. Of these Hogg is a very lively batsman, wicket keeper and has always been of very great help to the team. He is a quick scorer, his favourite stroke being a hearty "*pull*" to the leg.

Madhava Rao is a very steady bat while Sivaraman though he is not a 'Medico' proper had the right to play for the College by virtue

of his being in the Sanitary Inspectors class. He holds his place in the team in view of the fact that he is a steady bat and a reserve wicket keeper.

Garsen and Periera our Hobbs and Sutcliffe are the best run getters for the team ; and the success of the College Cricket depended a good deal on them. One of them is sure to make a big score on any day and the big start they usually give is a great asset to the team. Our batting is really very strong. Dr. Koti, D'Costa, Hogg, A. V. Rajagopalan have all done very well with the bat.

With D'Costa and Cullen to field anywhere, and Garson in the slips there is nothing to say against our fielding. Each one has done his share faithfully so far as this part of the game goes.

Our bowling strength is the same as last year. Rama Rao our opening bowler could not come up to last year's standard due to a bad leg. Despite this he has been relied on for great things. Wilkinson's speed has puzzled many great batsmen. Aleem (*alias* Chansahib) has the most successful bowler with his deceptive flight and a variety of pace. Rajagopalan is always known to get a wicket in the first over he bowls and as such he has always been a very useful change bowler. Garson with his slow spinners has run through many heavy rids.

Our trip to Bangalore was a very enjoyable one and the games we played there were all of a very high standard. We could not avail of the services of Chansahib and Dr. Koti during the tour. With them we should have easily won all the games there.

We are sorry we could not retain the Intercollegiate Trophy which we won last year, not because we did not play well but *only* because of *ill luck*. We are quite sure that with this team we can beat any other team and what we have lost by *chance* this year we will fight to win by merit next year.

Appended are the details of games played during this Season (1934-35).

Mention must be made of our energetic sports Secretary Mr. Achuthan to whom we owe our successful session.

Athletics

- (1) Medical College v. Anglo-Indian Sports Club on 22nd July 1934 at Medical College Grounds. Medical College 164.
(Garson 45 including 7 fours. Madhava Rao including 4 fours. Sivaraman 25).
Anglo-Indian Sports Club 122 for 8 wickets.
(Aleem 3 for 30. Wilkinson 3 for 56).
Match Drawn.
- (2) Medical College v. Kirkee XI on 24th July 1934 at Medical College Grounds. Medical College 142.
(Garson 43 including 5 fours. Cullen 29 not out S. V. T. Chari 24).
Kirkee 64.
(Wilkinson 5 for 19. D'Costa 3 for 24).
Match won by 78 runs.
- (3) Medical College v. Engineering College (Inter-collegiate) on 28th July 1934 at Medical College Grounds.
Engineering College, 88.
(Rama Rao 4 for 26. Wilkinson 3 for 33).
Medical College 95 for 3 wickets.
(Dr. Khote 31. Sivaraman 25. Garson 22).
Match won by 7 wickets and 7 runs.
- (4) Medical College v. Minerva Cricket Club on 29th July 1934 at Medical College Grounds.
Medical College 66 (Garson 25).
Minerva Cricket Club 140 for 9 wickets.
(Aleem 6 for 32 in 7.3 overs. Rama Rao 2 for 24).
Match lost by 1 wicket and 74 runs.
- (5) Medical College v. Presidency College on 4th August 1934 at Marina Grounds.
Medical College, 155.

(Pereira 82 including 10 fours).

Presidency College 157 for 8 wickets.

(Rama Rao 4 for 59. Aleem 2 for 66).

Match lost by 2 wickets and 2 runs.

- (6) Medical College v. Christian College on 11th August 1934 at Cristian College Grounds.

Christian College, 52.

(Aleem 5 for 10 in 4.4 overs. Rama Rao 3 for 22).

Medical College 63 for 2 wickets.

(Carson 36 not out).

Match won by 8 wickets and 11 runs.

- (7) Medical College v. Y. M. C. A. College on 18th August 1934 at Y. M. C. A. College Grounds.

Medical College, 86.

(Dr. Khote 35. Madhava Rao 14).

Y. M. C. A. College 93 for 4 wickets.

(Aleem 2 for 24. Rama Rao 2 for 25).

Match lost by 6 wickets and 7 runs.

- (8) Medical College v. Loyola College on 25th August 1934 at Medical College Grounds.

Medical College, 122.

(Garson 41. D'Costa 21).

Loyola College, 53.

(Aleem 3 for 14. Rama Rao 3 for 18).

Match won by 69 runs.

- (9) Medical College v. Triplicane Cricket Club on 26th August 1933 at Medical College Grounds.

Triplicane Cricket Club, 118.

(Aleem 3 for 21. Rama Rao 3 for 38).

Medical College, 90.

(Hogg 26. D'Costa 19. Dr. Khote 17).

Match lost by 28 runs.

(10) Medical College v. Law College on 1st September 1934 at Medical College Grounds.

Law College, 115.

(Rajagopalan 3 for 29. Carson 3 for 36. Wilkinson 2 for 29).

Medical College 117 for 8 wickets.

(Pereira 47. Hogg 22. S. V. I. Chari 14).

Match won by 2 wickets and 2 runs.

(11) Medical College v. G. Parthasarathy's Eleven on 15th September 1934 at Medical College Grounds.

Medical College, 84.

(Wilkinson 23 not out. Dr. Khote 15).

G. Parthasarathy's Eleven 116 for 9.

(Garson 5 for 32. Rama Rao 4 for 38).

Match lost by 1 wicket and 32 runs.

(12) Medical College v. Bangalore United Sports Club on 22nd September 1934 at Gymkhana Grounds, Bangalore.

Medical College 185 for 9 wickets and declared.

(Wilkinson 33 including 5 boundaries. D'Costa 33. Rajagopalan 26 not out).

Bangalore United Sports Club 60 for 6 wickets.

(Wilkinson 4 for 39).

Match drawn.

(13) Medical College v. St. Joseph's College, Bangalore, on 23rd September 1934 at St. Joseph's College Grounds, Bangalore.

Medical College, 159.

(D'Costa 68 including 10 fours. Pereira 43 including 7 fours).

St. Joseph's College 166 for 8 wickets.
(Garson 5 for 51).

Match lost by 2 wickets and 7 runs.

- (14) Medical College v. Bangalore City Gymkhana on 26th September 1934 at city Y. M. C. A. Grounds, Bangalore.

Medical College, 172.

(Pereira 51. Garson 43. Hogg 38. Rajagopalan 20).

Bangalore City Gymkhana 136.

(Garson 4 for 51. Rama Rao 3 for 19. Rajagopalan 3 for 29).

Match won by 36 runs.

- (15) Medical College v. Bangalore Indian Gymkhana on 28th September 1934 at Bangalore Indian Gymkhana Grounds.

Medical College 111.

(Pereira 39 including 6 fours. Rajagopalan 19).

Bangalore Indian Gymkhana 116 for 5 wickets.

(Rama Rao 2 for 55).

Match lost by 5 wickets and 5 runs.

- (16) Medical College v. Bishop Cotton's School, Bangalore on 29th September 1934 at Gymkhana Grounds, Bangalore.

Medical College, 149.

(Pereira 44 including 6 fours. D'Costa 30 including 5 fours. Sivaraman 24).

Bishop Cotton's School 80 for 6 wickets.

(Garson 4 for 36.)

Match drawn.

- (17) Medical College v. Veterinary College on 20th October 1934 at Medical College Grounds.

Medical College, 235 for 7 wickets and declared.

(S.V.T. Chari 57. Wilkinson 38 not out. Garson 36. Dr. Khote 24).
Veterinary College, 32.

(Garson 4 for 18. Wilkinson 2 for 11).

Match won by 203 runs.

Inter-class Matches.

I year beats IV year by 27 runs.

I year 113 (Hogg 47. Sivaraman 23. Madhava Rao 21.
S. V. T. Chari 5 for 18).

IV year 86 (Cullan 30. S. V. T. Chari 13. Madhava Rao 4 for 12.
Terry 3 for 28).

- (1) Medical College "B" v. Friends United Club on 12th September 1934 at Medical College Grounds.

Friends United Club, 76.

(Garson 5 for 20. Hogg 2 for 9.)

Medical College "B" 72.

(Garson 29. Hogg 16.)

Match lost by 4 runs.

- (2) Medical College "B" v. Y. M. I. A. on 16th September 1934 at Medical College Grounds.

Y. M. I. A., 146.

(Garson 9 for 85 in 22.2 overs of which 2 were maidens.)

Medical College "B", 120.

(Atma Rao 40. Garson 33. Kuruvilla 10.)

Match lost by 26 runs.

- (3) Medical College "B" v. Eccentrics "B" on 10th November 1934 at Medical College Grounds.

Eccentric "B", 70.

(Atma Rao 5 for 23. Garson 3 for 31.)

Medical College "B", 38.

(Garson 13 not out.)

Match lost by 32 runs.

*Receipts and Payments Account of the Madras Medical College Association and Magazine for the
year ending 28th February 1935.*

RECEIPTS.	Rs. A. P.	Rs. A. P.	PAYMENTS.	Rs. A. P.	Rs. A. P.
To Cash Balance as on 1-3-1934 :—					
Association Account	...	136 2 0	By Association :—		
Magazine Account	...	1,269 5 0	Conveyance and Cooly	...	0 2 0
			Graduates' Day reception and entertain-	...	808 12 9
.. Association :—			ment	...	7 0 0
Subscriptions	...	724 0 0	Miscellaneous	...	815 14 9
Interest on Bank current account	...	15 3 2	.. Magazine :—		
Miscellaneous (Benefit performance receipts)	...	45 5 0	Printing and Stationery	...	1,394 2 6
			Cooly and Conveyance	...	1 10 0
.. Magazine :—			Postage	...	31 10 0
Subscriptions	...	1,484 0 0	Establishment	...	160 0 0
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MADRAS,
11th March 1935.

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Hon. Treasurer, Medical College Association.

Examined and found correct.

Approved by the General Body Meeting held on 15-3-35,

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President, Medical College Association.

University of Madras.

Pre-Registration Examination, 1934

INORGANIC CHEMISTRY

MONDAY, 10TH DECEMBER. 10 A.M. to 1 P.M.

Candidates must use separate books for PARTS I and II.

PART I

1. What is a buffer solution? How are such solutions made? [15]
2. A solution containing 1.905 grams of a substance in 100 c.c. of water was found to freeze at -0.61°C . The freezing-point constant for water is 18.6 . What are the molecular weight of the substance and osmotic pressure of the solution? [20]
3. Explain briefly what is meant by the terms:—(a) isotope, (b) mass spectrum, (c) atomic number, (d) atomic nucleus, (e) Alpha rays. [15]

PART II

1. What observations led to the view that salts are ionized in solution? What do you understand by degree of ionization and how is it determined? [20]
2. Explain the alkalinity of a solution of sodium carbonate. Why should you not use phenolphthalein as an indicator for titrations with sodium carbonate? [15]
3. What is the Law of Mass Action? How is it applicable to reversible reactions? Give examples. [15]

Pre-Registration Examination, 1934

PHYSICS

MONDAY 10TH DECEMBER. 2 P.M. to 5 P.M.

Candidates must use separate books for PARTS I and II.

PART I

1. Write a note on wave-motion so as to bring out (a) the difference between the longitudinal and transverse forms, (b) the

significance of the terms *wave-length*, *wave-velocity*, *frequency*, and *phase of wave motion*.

Explain any method by which you would determine the wave-length of sodium light. [18]

2. How would you verify experimentally that the intensity of the magnetic fields due to a short bar magnet at any point on its axis produced is nearly double the intensity at a point on the perpendicular bisector of the axis of the magnet and at the same distance from the centre of the magnet as the first point?

Explain how you would determine the horizontal intensity of the earth's magnetic field at any locality. [16]

3. How would you verify, experimentally, Joule's law for the production of heat in a conductor conveying electric current?

Calculate the resistance in ohms of a 220-volt 16-watt glow lamp. [16]

PART II

1. Define the terms *pitch*, *intensity*, and *quality* as applied to musical notes.

Describe how the wave form of a musical note could be studied experimentally. [16]

2. Describe, briefly, a method of measuring—

(a) the surface tension of water,

(b) the density of an oil, of which you have only a few drops, and

(c) the percentage humidity of the air in the laboratory. [18]

3. Indicate, briefly, the methods of measuring heat quantities.

Outline a calorimetric method of measuring the heat available from a glow lamp. [16]

Pre-Registration Examination, 1934

GENERAL BIOLOGY

TUESDAY, 11TH DECEMBER. 10 A.M. to 1 P.M.

Candidates must use separate books for PARTS I and II.

PART I

1. What is fermentation? What is its probable significance in relation to normal metabolic processes? Give an account of a typical example. [17]

2. Describe an experiment to show that plants exhibit root-pressure. How is this pressure produced, and of what advantage is it to the plant? What natural phenomena in herbaceous plants are due to root-pressure? [17]

3. Give some account of the part played in plant-nutrition by (a) sugar, (b) starch. [16]

PART II

1. Describe the structure and life-history of the Tapeworm. [18]

2. Describe the heart of the frog and explain the course of circulation through its chambers. [16]

3. How does an insect (e.g. Cockroach) resemble and differ from an Earthworm? [16]

First M.B. and B.S. Examination, 1934

ORGANIC CHEMISTRY

SATURDAY, 1ST DECEMBER. 10 A.M. to 1 P.M.

Candidates must use separate books for PARTS I and II.

PART I

1. What is petroleum, and what products are got from it? [8]

2. How is aniline prepared and what are its properties? [8]

3. Explain the meaning of 'cis-trans isomerism' and give examples of it. [9]

PART II

1. Indicate by means of equations how you can synthesize (a) lactic acid, (b) malic acid, (c) malonic acid. What is the effect of heat on these compounds, and what generalizations may be drawn from the course of the reactions? [8]

2. What general chemical properties are usually associated with aliphatic compounds containing the following groups in the molecule:— (a) $-\text{CHO}$, (b) $-\text{NH}_2$? [8]

3. How is glycerol obtained? How does it behave when oxidized under different conditions? [9]

First M.B. and B.S. Examination, 1934

ANATOMY, INCLUDING THE ELEMENTS OF
HUMAN EMBRYOLOGY

SATURDAY, 1ST DECEMBER. 2 P.M. to 5 P.M.

Candidates must use separate books for PARTS I and II.

PART I

1. Describe fully the lateral wall of one of the nasal cavities. State briefly how the nasal cavities are developed. [17]

2. Describe the radio carpal articulation (wrist joint). [16]

3. Give an account of the duodenum. [17]

PART II

1. Name and give the situation and relations of the groups of lymph-nodes in the neck. Mention the areas drained by each group. [17]

2. Give the origin, course, relations, and termination of the phrenic nerve. [16]

3. Describe fully the testis and give an account of its development. [17]

First M.B. and B.S. Examination, 1934

PHYSIOLOGY, INCLUDING BIO-CHEMISTRY

MONDAY, 3RD DECEMBER. 10 A.M. to 1 P.M.

Candidates should use separate books for PARTS I and II.

PART I

1. Describe the musculature of the *heart* and discuss briefly the causation of its rhythmicity. [17]

2. What are the physical and chemical properties of *proteins*? Mention any **two** nitrogenous foodstuffs, and discuss their relative physiological value. [17]

3. Describe the structure and functions of the *vestibular apparatus*. [16]

PART II

1. Describe the mechanisms involved in the maintenance of an adequate oxygen supply to the skeletal muscles. [17]

2. What evidence is there for attributing special functions to the frontal lobes of the brain? [17]

3. Describe the structure and functions of the *spleen*. [16]

Second M.B. and B.S. Examination, 1934

PHARMACOLOGY

SATURDAY, 1ST DECEMBER. 10 A.M. to 1 P.M.

PART I

1. Describe the action of an intravenous injection of a therapeutic dose of *Strophanthin* in cardiac disease. What other drugs produce similar effects, and how do these differ from strophanthin? [18]

2. Write a prescription for half a fluid ounce of a sterile solution of cocaine hydrochloride of such a strength that $\frac{3}{4}$ of a grain shall be present in every fifteen minims of the solution.

How does cocaine act on a mixed peripheral nerve and on the pupil? [16]

3. Compare the pharmacological action of the following:— castor oil, jalap, and senna. State in what forms senna may be administered. [16]

PART II

1. How would you determine the mode of action of a drug said to act on the autonomic nervous system? [15]

2. Describe the characteristic effects of compounds containing (a) silver, (b) copper and (c) zinc. In what forms are these drugs used and for what purposes? [17]

3. Describe the pharmacological action of bismuth. Give its preparations with their doses. [18]

Second M. B. and B. S. Examination, 1934.

HYGIENE

SATURDAY, 1ST DECEMBER. 2 P.M. to 5 P.M.

PARTS I and II to be answered in separate books.

PART I

1. Write short notes on:—

- (a) Deep well.
- (b) Bore-hole latrine.
- (c) Water carriage system.
- (d) Kata thermometer.
- (e) Vital index.

[16]

2. Describe briefly the mode of spread and the means of prevention of cholera. [18]

3. What purposes are served by vitamins in diet? Give a few examples of the commonly available foodstuffs containing the different vitamins. [16]

PART II

1. Give a brief description of the preventive measures that should be adopted against leprosy in a province like Madras. [18]

2. What is a sewage farm? What are the pre-requisites for its success? Describe briefly its working. [16]

3. Discuss the effects of dust in industries on the health of the employees. [16]

Second M.B. and B.S. Examination, 1934.

GENERAL PATHOLOGY WITH BACTERIOLOGY

MONDAY, 3RD DECEMBER. 10 A.M. to 1 P.M.

PART I

1. Define thrombosis. What immediate and remote changes are found in the brain as a result of thrombosis of a cerebral artery? [15]

2. Name some of the acid-fast bacilli. Describe the naked-eye and microscopic appearances which may be found in tuberculous infection of the intestine. How do they differ from those due to *B. typhosus*. [20]

3. Describe *Ancylostoma duodenale*. What lesions are caused by this parasite? [15]

PART II

1. Describe the technique of the Widal reaction and discuss its significance. What is meant by a 'rise in titre' of agglutination? [18]

2. Describe the post-mortem appearances that may be met with in a case of portal cirrhosis. [18]

3. What are the lesions caused by *Treponema pallidum* in the heart? [14]

Second M.B. and B.S. Examination, 1934.**OPHTHALMOLOGY**

MONDAY, 3rd DECEMBER. 2 P.M. to 5 P.M.

PART I

1. What are the chief causes of preventible blindness in children? How would you treat any one of them? [9]
2. Explain the onset of glaucoma when the lens undergoes swelling. How would you treat it? [8]
3. What is the significance of papilloedema? [8]

PART II

1. Describe the appearance of an eye in an advanced stage of trachoma, mentioning the complications and sequelae met with in such a case. [8]
2. What are the indications for performing enucleation of an eye? Describe the operation briefly. [8]
3. Name the principal causative factors in retinitis. Give a short description of the ophthalmoscopic appearances in one of the varieties of retinitis. [9]

Final M. B. and B.S. Degree Examination, 1934**FORENSIC MEDICINE**

SATURDAY, 1st DECEMBER. 10 A.M. to 1 P.M.

PART I

1. What are dying declarations? How are they recorded? [14]
2. In what cases may determination of age be required? How is age determined in the living? [18]
3. Give the post-mortem signs in death due to drowning. [18]

PART II

1. Define sodomy. What are the other unnatural offences? How would you investigate a case of alleged sodomy. [15]

2. What are the common abortifacients used in India? How are they used, and with what results? [15]

3. What are the signs, symptoms, treatment, and post mortem appearances in a case of cyanide poisoning? [20]

Final M.B. and B.S. Degree Examination, 1934**SURGERY**

MONDAY, 3rd DECEMBER. 10 A.M. to 1 P.M.

PART I

1. Discuss the causes, pathology, symptoms, and treatment of fistula in ano. [17]
2. Describe the pathological processes as a result of which gall-stones are formed. What symptoms would lead you to suspect the presence of a stone in—
(a) the cystic duct,
(b) the common bile duct? [17]
3. Describe in detail the symptoms and physical signs in a patient suffering from compression of the brain—consequent to an injury to the head. [16]

PART II

1. Discuss the pathology of an aneurysm arising in the popliteal artery and describe its treatment. [16]
2. What do you know of neoplasms of the testis? Describe the lymphatic drainage of that organ. [17]
3. Describe the signs, symptoms, and treatment of a case of tuberculous disease of the lumbar spine. [17]

Final M.B. and B.S. Degree Examination, 1934

OBSTETRICS AND GYNAECOLOGY

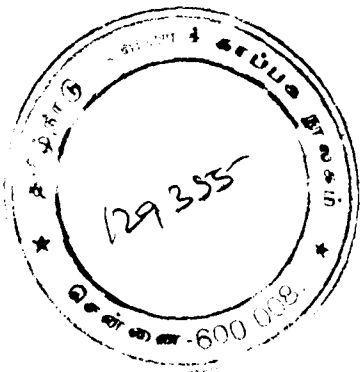
TUESDAY, 4TH DECEMBER. 10 A.M. to 1 P.M.

PART I

1. Describe the management of normal labour. [16]
2. What are the varieties of uterine inertia? Describe a typical case of one variety, indicating the causes, course of labour, and treatment. [17]
3. What are the common injuries met with in the child at birth consequent on labour? How are they caused and how prevented? [17]

PART II

1. Discuss the causes of haemorrhage in a woman aged 35. Give the differential diagnosis and principles of treatment. [17]
2. Describe the anatomical and clinical causes of complete prolapse of the uterus. What symptoms are produced by such a condition, and shortly describe the treatment? [16]
3. Describe the pathology, clinical features, and treatment of a multilocular, pseudomucinous cyst of the ovary. [17]



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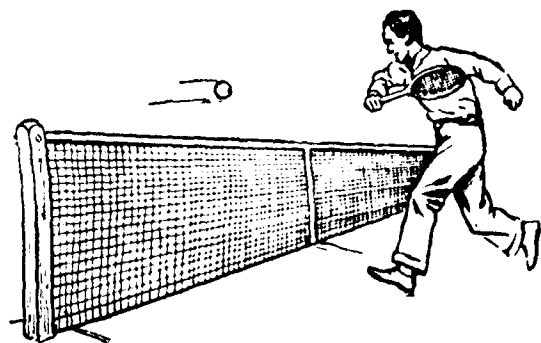
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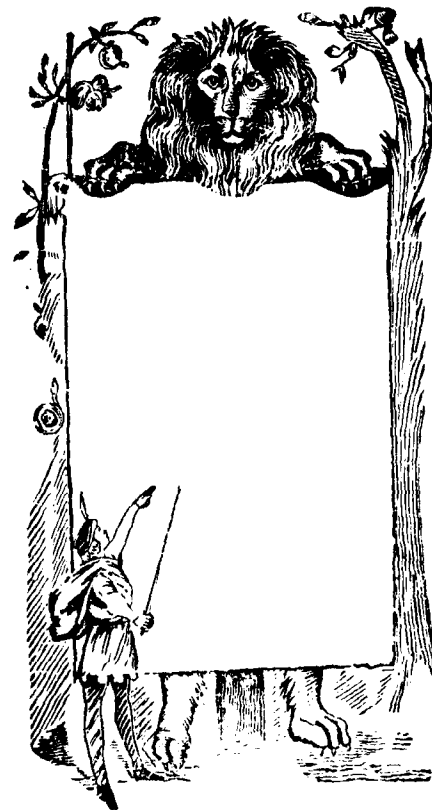
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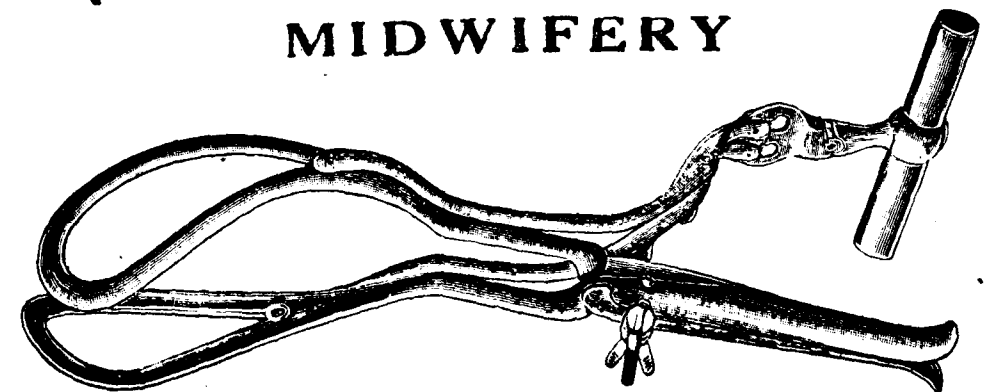
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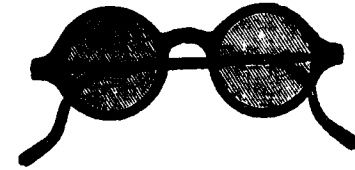
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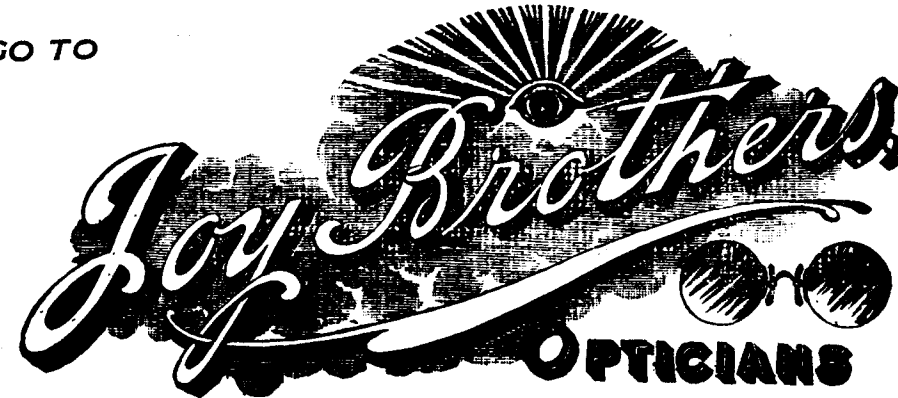
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