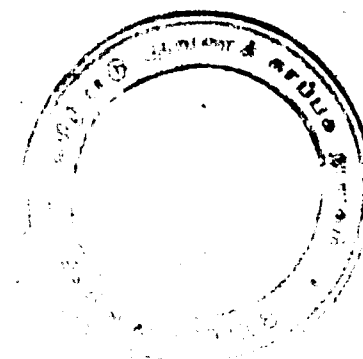


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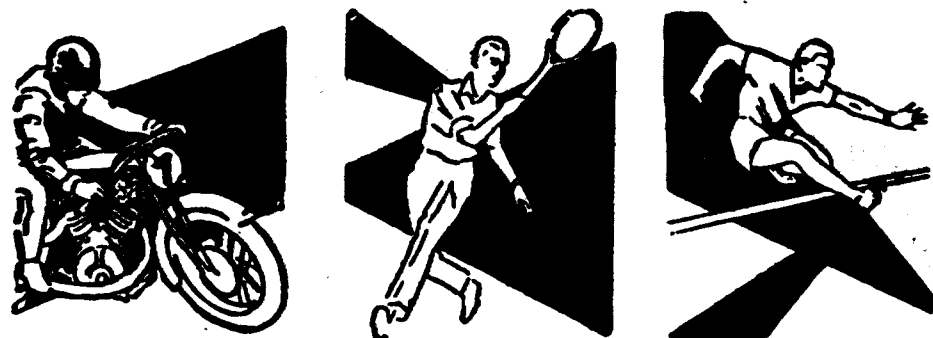
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Vol. XIII, No. 2.

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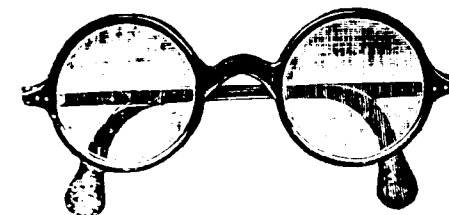
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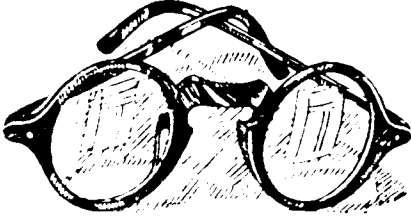
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THE OATH OF HIPPOCRATES

I SWEAR by Appolo the Physician, by Asklepios, by his daughters Hygeia and Panacea and by all the gods and goddesses, that to the best of my ability and judgment I will faithfully keep this oath and obligation.

The master that has instructed me I will esteem as my parents, and shall supply to him, as occasion may require, the comforts and necessities of life. His children I will regard as my own brothers, and if they desire to learn I will instruct them in the same art without any reward. My patients shall be treated by me to the best of my power and judgment in the best manner, without injury or violence.

Neither will I be prevailed upon by anyone to administer noxious medicines nor will I be the author of such advice myself. I shall never recommend means to procure abortion, but will live and practice chastely and religiously. I will not meddle with lithotomy, leaving that to operators of that art. Whatever house I am called upon to attend, I will aim at making the patient's good my chief aim, avoiding all injury, corruption and unchastity ; and whatever I hear in the course of my practice relating to the affairs of life of my patients that ought to remain secret, nobody shall ever know of me.

May I be prosperous, honoured and esteemed by all men as I observe this solemn oath, and may the reverse be my lot if I violate it and forswear myself.

THE MADRAS

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NOVEMBER 1933

No. 2

Kala-Azar.*

BY M. R. GURUSWAMY MUDALIAR, B.A., M.D. & C.M.,

*Physician, Government General Hospital,
and Professor of Medicine, Medical College, Madras.*

I am sure all of you are conversant with the parasite of Kala-Azar. So far as Leishmaniasis is concerned, there have been discovered 4 different types in different sorts of lesions. The one we are concerned to-day, is the type which is known as the Leishman-Donovan parasite for which Madras General Hospital takes the credit as being the first to find the parasite. It was Donovan that discovered the parasite, and I need not go into the history because it will take a long time. Suffice it to say that so far as K. A. is concerned, Madras has taken a leading part in the investigation.

The disease occurs sporadically and it is rarely an epidemic disease. In many places it has been found as endemic. Madras is one of the endemic areas. Usually it has been found that the disease is one confined to rural tracts, rarely found in large cities to the same extent as in villages. But Madras City is peculiar in having the largest amount of incidence of K. A.

The conditions incident to the spread of the disease are the domestic conditions; by which I mean it is a disease which apparently goes in certain families. It is not

* A lecture delivered under the auspices of the Madras University Extension Board.

unusual for us in the Hospital to enquire into the history; and if a person comes with a long continuous fever and says there has been a brother or sister or some other relative who suffered from K. A. some years previously, we immediately make a short cut and suspect that the condition must be one of K. A. Cases coming from Royapuram, as soon as we hear the name of the individual, we try and hunt up in our records, whether the same name has occurred at any time previously, and some one or other of the doctors in the Hospital remembers a person of the same name having been admitted. So what is admitted as possibly a case of pneumonia, may turn out to be a case of K. A. Sometimes it may be admitted as Enteric and it turns out to be K. A. At the same time it is not so very contagious from person to person that we may say that it infects brothers or sisters, or husband and wife, though there may be close contact with these. Sometimes it has been found that the husband has been affected in one year and 2 or 3 years later the wife is affected. So that, whether the disease is clinging to the families or to houses, is somewhat doubtful. Possibly, it is much better to say that it is a house infection, and really it sticks to houses. In Assam, in the tea plantations, they tried the experiment of burning up the whole huts infected with K. A. This was done in the beginning before they knew much of the disease. They used to build fresh huts on the same sites, probably on the same walls left, they put up a fresh thatch, and people used to occupy these huts and used to get the infection again. That sort of attempt at eradicating the disease must be taken to be an experiment on a large scale, to see whether insects had anything to do with the carrying of the infection—whether a bed bug could have been or could be a transmitter. But this Assam experiment, or I would say, experience, would make one doubt whether bed bugs have ever been transmitters of

K. A. as when the houses were burnt, the bugs could not have survived.

Age Incidence.—All ages are susceptible to K. A.—children, adults and old people. One fact that I have noticed in Madras during the last few years is that children are getting infected in large numbers. When in K. A. the fever starts, with type of fever which we attribute to typhoid then we may suspect that there is possibly an epidemicity starting. The year 1921 was one such year. Until then the previous records that I have got show that the disease was going down. During that year I had a large number of cases coming in. Some of the cases that came in were taken to be enteric and later we discovered the mistake. We find in succeeding years the cases coming to hospital were numerous and later on the type of cases fell down, showing that during epidemics the children showed a greater amount of incidence than during non-epidemic seasons.

So far as *sex* is concerned, the proportion seems to be in Madras about the same number of males and females. In Calcutta incidence among males seems to be more numerous than in females. In the Tea plantations of Assam, Rogers found no difference in the sex incidence. In Italy women preponderate over men.

So far as *race* is concerned, all races are susceptible.

Seasonal Incidence.—In Calcutta, June is the worst month. In Madras the highest number of cases occur during January, February and March, and the next highest seems to occur in May. So far as admissions into Hospital are concerned, the highest number occurs in March, the next highest incidence is in September. If one might guess what is behind, we find that February and March are about the time when we have the optimum temperature so far as

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Madras is concerned, and apparently that is about the time when K. A. parasites or whatever may be vector, seem to flourish best. Apparently it has got to do something with humidity. Humidity between 50 and 60 per cent is said to be the best time for the transmission of the infection. So the student who is searching for the vector will have to concentrate on the insects which best thrive with a humidity between 50 and 60 per cent. One does not know why it is sticking to Madras, while places close by are free from K. A. For a long time, it was thought that a slight rise of altitude was enough to prevent K. A. infection. Some of my colleagues at Bangalore were under impression that they had no K. A. at all there, till one case which was treated as chronic malaria for a very long time and which was sent over here, turned out to be a case of K. A. At one time it was thought more than 2,000 feet above the sea level was enough to prevent K. A. It is now found that upto 6,000 feet we are not safe. Above 6,000 feet K. A. has not been traced. In Madras K. A. seems to stick to places which are low lying, damp and close to stagnant pools of water or running water. Although some years ago, it was confined to certain localities such as Old Washermanpet and Royapuram, it has now spread to almost all the parts of the City on the northern side of the Cooum and you find now that George Town, Mannady, Choolai, Chintadripet and Egmore have all been infected.

There is one peculiarity about its spread—it is very slow. The epidemic seems to spread very very slowly. In areas like Burdwan and Assam and other places where they have worked out large areas which were infected, they have found that the area of encroachment is at the rate of 10 miles every year. That is a magnificent march! but on the way everything is devastated. And as I have already told you, it sticks to houses, so that we in the

hospital can say which are the houses in some part of the city which are infected, and if patients come from those houses, we at once suspect K. A.

What are the vectors responsible for the spread of the disease? Various theories have been put forward, and each observer has met with some theory or other which has not been substantiated later. One of the theories has been that it is an infection conveyed from man to man. But as I have already told you, it is not possible to substantiate this theory. Another theory is that it is due to the blood sucking insects, and about this theory, a lot of experiments have been carried out, and again Madras has been the first to investigate the source of infection blood, and Donovan was almost the first person to suspect blood sucking insects, and he being a modest man, Paton used to publish some of his ideas. It would not be proper for me if I did not mention what was done by Donovan as I must give credit to my old teacher and master. But Paton improved upon it. Donovan had tried the bed bug and found that it was not a carrier. But Paton was rather in a hurry to publish results, and so he published that he had found the bed bug a true medium of transmission, and even a few years ago, this theory was believed in. It was not until another Madrasi—this time Swaminathan—proved definitely that the bed bug was not a criminal in this affair that it was taken away from the list of accused. Another of the ideas that Donovan had was the *Pediculi hominis*. One which he long experimented with was the *Conorrhynus*. He used to feed them on patients, make them breed, but after numerous experiments, he gave it up and in the end he came to no conclusion. Are we any better now? We too have come to no conclusion still.

Sand-fly was one of the latest accused, but the K. A. Commission could not convict it. Napier was another of the investigators, and he was of opinion that people who

had chickens and ducks in their houses are liable to catch the infection, but if he had worked at Madras, he could have found that vegetarians who do not think or dream of keeping ducks or chicken, suffer from K. A.; and I do not think his opinion is valid.

A number of other experiments on dogs and other animals were done, and under the direction of Donovan about 400 dogs were dissected by Dr. Ganapathi Iyer, and he could only find one dog which showed the L. D. or something which morphologically appeared to be L. D. Dogs, monkeys, jackals, etc., have been inoculated in India successfully. Outside India guineapigs, rabbits and flying foxes have been inoculated successfully. Of these they have found that hamsters are the most susceptible to the disease and therefore the best media. Dogs and monkeys come next, next comes foxes, rats, guineapigs and last rabbits.

Symptomatology.—K. A. is so well known that there is not much to speak about the symptoms.

Some people have thought that the incubation period was only 10 days. Others have thought it was 6 weeks, and one of the people who put the incubation period into the longest period was the present Surgeon-General Sprawson. He noted the incubation period was 2 years. And if we take the Assam workers' experience it is somewhere about 6 weeks. The onset I told you is in some cases something like typhoid. In other cases it is of the malarial type. In other cases irregular fever now and then. The insidious type is very often mistaken for Tuberculosis. You will find that there is some reason for mistaking these cases for tuberculosis. Patient comes to you quite emaciated. There is a certain amount of loss of hair; there is great loss of weight. He has got loose bowels and very often he has got a hacking cough. This hacking

cough is said by the Pathologist to be due to enlarging spleen; and some of the students will wonder how does the enlarging spleen give rise to the hacking cough? It is thought to have something to do with the vagus and the vagus irritation is said to cause the hacking cough. So with the hacking cough, with an enlarging spleen, with an irregular fever, with great emaciation, with a certain amount of diarrhoea, it is no wonder if the case is mistaken for incipient tuberculosis, specially with intestinal complications. Then there is another type, a type with unknown beginnings where the person does not complain of fever. He comes for something or other, a diarrhoea or dysentery, and you find an enlarged spleen, and sometimes you find K. A. bodies in such persons with absolutely no history of fever, and these are cases which we cannot put down as having definite beginnings.

It is essential whenever we get fever of continuous type to ask the patients to keep a temperature chart, marked if possible, every two hours. And if you get what is known as the triple rise or more often the double rise of temperature, then you are lucky in your diagnosis. Napier thinks it is not always found; and in my own personal experience in the General Hospital with some 400 cases a year, it is not always found; but when found, it is always characteristic. The double rise is suggestive of K. A.; the triple rise, I have not found, in any other condition except in K. A. The double rise I have found often enough in Malignant Tertian and more often in K. A. But if there is a triple rise, there is no doubt about K. A. So that the temperature chart, if it is marked out every 2 or 4 hours, it is likely to be of very great help in suggesting the diagnosis.

Among symptoms, loss of weight is one of the prominent things. The dark skin is suggestive no doubt, and

if a person comes with a dark skin and a large spleen and an enlarged liver, you are justified in suspecting the case to be one of K. A. But these conditions are also found in other cases, such as, heart trouble, malaria, and other conditions, where also you may find enlargement of liver and spleen. But there is a point in the enlarged liver which is peculiar to K. A. as against heart trouble or malaria; and that is the *sharpness of the border*. The malarial liver has not got that sharp border that the K. A. liver has; so that the enlarged liver with very sharp margin is suggestive, very strongly suggestive, of K. A. specially when it is associated with an enlarged spleen. A spleen enlarged in proportion to the duration of the fever is very suggestive of K. A. If the spleen has enlarged to the level of 2 fingers below the costal margin it means 4 months; between costal margin and umbilicus, it means 5 months; to umbilicus it means 6 months; so that there is a certain rate of enlargement in all cases of K. A. When with an enlargement of spleen and liver, we find shortness of breath, a certain amount of anæmia, bleeding from the gums, a very good appetite, a very clean tongue, and the patient unable to perceive the temperature even when the temperature is 103°, we know we are dealing with a case of Kala-Azar. A painful spleen is also characteristic of K. A. But in my experience, only 3 or 4% show this characteristic. Tenderness of the spleen is another symptom. The patient suddenly complains of pain all over the spleen and 3 or 4 days later, it is confined to one spot. An infarction of the spleen has occurred and the infarction of the spleen is due to the K. A. parasites having invaded the endothelium and the pain suddenly starting, and then settling down to a particular spot and when we localise it we find the spot of tenderness.

Nervous symptoms.—Some authors are of opinion that there are no mental symptoms at all in cases of K. A. If

they mention any, they mention only Herpes, but in those cases, I think it is due to the Tartar Emetic treatment.

In children there is another valuable aid to diagnosis. Just as the liver may be a good tip in cases of adults, in children the bone is a good tip. There is a tenderness about the shin bones (about the tibia). There is also a certain amount of tenderness, and pitting on the shin. If you get a pitting and tenderness, of course you usually think of osteomyelitis, or some such thing, but in these cases it is simply due to the extreme congestion that has been produced in the periosteum and the skin and subcutaneous tissues show peculiar changes.

In women especially, a point that you might remember is amenorrhœa. It is an early sign in cases of K. A.

Complication.—You know the usual complications respiratory, such as pleurisy, bronchitis, pneumonia, etc. Of the alimentary complications, chief are put down as cancrum oris, diarrhœas and dysenteries.

Among the sequelæ, the most important is the Dermal Leishmaniasis of Brahmachari. The first report of such a case was made in 1919 by Brahmachari. What he observed was some white patches on the skin of the person who had been treated with the usual antimony treatment. Brahmachari has got certain views on the basis of finding L. D. bodies in the cutaneous tissues of K. A. patients. He thinks that the parasite has been destroyed from the viscera; so that visceral Leishmaniasis is no longer there, but the parasites could still be found in the skin, giving rise to this form of Dermal Leishmaniasis. While the visceral Leishmaniasis is treated with antimony, Dermal Leishmaniasis defies treatment, and is often mistaken for leprosy. Diagnosis is usually made by a blood examination. If you find a definite leucopœnia, with a great amount of mono-nuclear increase, and with certain changes in the

polymorpho nuclears, (the changes occurring being known as budding and banding of the polymorphonuclears,) you may suspect K. A. It was in that way that Donovan and his students were able to find in approximately 93% of cases K. A. parasite in the peripheral blood, though other workers in other areas think that it is a waste of time to look for these parasites in the blood, while it is so easy to put a needle into the spleen and take a smear and satisfy yourself in a few minutes. Smears may be helpful and when smears are not likely to be helpful, you may try some of the biochemical methods of serological tests. The serological test that Brahmachari introduced was known as the globuline precipitation test. This test is not of much value. In 1924, I had some mishaps with liver puncture and after that I gave up liver puncture. The proportion of R. B. C. to W. B. C. is in K. A. cases as follows:—

R. B. C.	:	W. B. C.	::	1000 or 2000	:	1
the normal being		do	::	500 or 600	:	1

The Aldehyde test is the one which we commonly do in the ward, where the serum coagulates within 5 minutes. If to 1 c.c. of serum you add a drop of formaldehyde, you notice it rapidly gets opaque and sets. When it turns opaque, you treat the test as positive. But there is a drawback about this test. This test is negative for 2½ months after the fever has started. It is doubtful from 2½ months to 5 months; and it is positive after 5 months; so that unfortunately if the patient comes to you 10 or 15 days after the starting of the fever, this test is no good at all. The proper method would be to go by the process of elimination.

Treatment.—1913 was the first year in which a successful attempt was made to treat Leishmaniasis with Tartar Emetic. Rogers tried it in India for K. A. in 1915. The drug then used was Pot. Antimony tartrate. That was the drug we used in General Hospital. Sod. Antimony

tartrate was less toxic than Pot. Antimony tartrate, but the result were about the same. But it went out of fashion deservedly, because of vomiting, diarrhoea, various abdominal pains, joint pains that used to come in the wake of Sod. or Pot. Antimony tartrate injections. To avoid these complications, it was found necessary to find some other drug; and it was found that pentavalent preparations were much better. They came in as a substitute. The first in the field to introduce it was Brahmachary. He put his urea stibamine and made mint of money by keeping his formula secret. Of course we are still using urea stibamine. Amino-stiburia is equally good, and it was at one time suggested that this should replace urea stibamine in the General Hospital, but it was given up owing to the cost being a little higher. The last of the list is von Hayden 471. The advantage of this is that it can be kept in stoppered bottles for as long as two years in the tropics without getting altered, whereas urea stibamine cannot be opened and left for a few hours without changing.

The dosage of urea stibamine and other drugs is well known to you all and I need not go into that.

The effect of treatment will be seen by the fever coming down, in the increasing body weight, and in the spleen going rapidly and the liver going down slowly. The enlargement of liver persists even after treatment has been stopped.

The evidence of a cure can be taken only after 7 months. If there is no recurrence of the symptoms after 6 months, we take it that the condition has been cured. If the Gel test is negative, we also take it that the treatment has been successful. Intensive treatment of K.A. with urea stibamine has made for economy. The treatment last only 10 days. Though urine shows traces of antimony, no untoward effects have been observed so far.

Surgery of the Prostate—A Resume.

BY DR. MANGESH RAO, M.B. & C.M., F.R.C.S.E

Surgical Anatomy.—It is made of tubular glands with a considerable amount of unstriped muscle tissue. It is conical in shape and placed vertically with its base surrounding the neck of bladder and apex in close relation to the deep layer of triangular ligament. It is surrounded by a strong fibro-muscular capsule which sends in septa binding the glands together. Hence this capsule cannot be separated from the glandular tissue. The gland measures 3 cm. (1½") vertically, 4 cm. (1½") wide at its base and 2 cm. (¾") antero-posteriorly and weighs 8 gms. It has four surfaces and a broad convex anterior border. The superior surface at its base is in close relation to neck of bladder and is continued on to the posterior surface of the trigone. The posterior surface is in relation to the terminal part of rectum. The rounded anterior border is in relation with pubo-prostatic ligaments containing some muscle fibres and ¾" from the symphysis pubis. The two lateral surfaces are in relation with the anterior portions of Levator Ani muscles. The apex is in close relation to the deep layer of triangular ligament and ¾" from symphysis and 1½" from anus.

The prostate is surrounded by a firm fibrous sheath derived from the endo-pelvic fascia. This sheath is reinforced in front by some muscle tissue to form the pubo-prostatic ligaments and below, at the apex, is continuous with the deep layer of triangular ligament. By these the gland is kept in its position. Posteriorly the sheath is incorporated with the anterior layer of Denonvillier's fascia which intervenes between the gland and rectum. This fascia is a vestige of foetal peritoneal pouch extending

down towards the perineum. But the two layers can be easily separated. The anterior of these layers has a glistening surface and is continuous with the endo-pelvic fascia at the lateral borders of the prostate. The prostatic plexuses of veins and the nerves are placed on the anterior border and lateral surfaces of the prostate but closely applied to the endo-pelvic fascia.

The arterial supply is from branches of inferior vesical and middle haemorrhoidal on the superior-lateral aspects. Two little branches are found at the lateral sides of the vesical outlet, and are liable to bleed in prostatectomy. The lymphatics drain by four main trunks, two antero-lateral and two postero-lateral ones. The former into external iliac glands through a few glands in the retro-pubic space and the latter into internal iliac glands.

The prostate is developed from five sets of glands surrounding the urethra. The two lateral ones develop most, forming the lateral lobes. The anterior group remains small. The posterior group is divided into an upper and a lower set by the passage of ejaculatory ducts through the prostate. The median lobe is formed by the upper part of posterior group and may extend to a variable distance behind the vesical neck and the trigone. The stroma of the gland, made of fibrous tissue and unstriped muscle, is continuous with the capsule and divides the glands into several lobules each containing a central duct. These ducts 12-20 in number open into the prostatic sinus on either side of the urethral crest.

The prostatic urethra, the widest and most dilatable part, is about 3 cm. long and runs almost vertically through the anterior part of prostate. It is spindle shaped being wider in the middle and narrow at either ends. The lumen is horse-shoe in shape with convexity forwards. In its floor is a narrow longitudinal ridge—the urethral crest or

verumontanum, about 15-17 mm. long and 3 mm. high. It is made of erectile tissue and muscle fibres. In the lower part of the crest is a median elevation—the colliculus seminalis on which open the ejaculatory ducts and the mouth of the utricle. The utricle is about 6 mm. long and runs upwards and backwards into the middle lobe. It also contains a few glands with small ducts. On either side of the ridge is the prostatic sinus. The mucous lining of urethra contains small glands—the mucosal glands. In the submucous tissue are another set of glands—the sub-mucosal glands. These are separated from prostatic gland-substance by bands of fibro-muscular tissue coming from the anterior commissure and surrounding the urethra. On the posterior aspect above the verumontanum are three groups of peri-urethral glands. The sub-urethral glands of Randal lie between the verumontanum and vesical outlet, then the sub-cervical glands of Albarran and above these are the sub-trigonal glands of Home. These three groups go to form the so called middle lobe. Hence three sets of glands are seen in a cross section. The urethral mucosal glands then the sub-mucosal glands separated from the prostatic gland tissue by the fibro-muscular septum surrounding the urethra. These urethral groups play an important part in the formation of so called adenomatous hypertrophy of the prostate.

Congenital anomalies of prostate are rare and occur only with other developmental anomalies. Failure of union anteriorly occurs with extroversion of bladder or complete epispadias. Deficiency of growth may occur with cryptorchidism and consequent non-development of testis.

Congenital abnormalities of posterior urethra.—The most important is the presence of congenital valves. These are found only in the posterior urethra in connection with verumontanum. They allow the passage of a catheter but

balloon out and obstruct urinary flow. They are convex downwards. Three definite types have been recognised :

(1) Ridge-like folds extending down from verumontanum to be attached to the posterior and lateral aspects, or to the anterior and lateral aspects of urethral wall. In some cases a single unilateral valve may be present.

(2) Ridge-like folds passing upwards from verumontanum similar to the first type but attached to urethra just outside the vesical sphincter.

(3) Disc-shaped valve with a central or upper or lower opening attached anywhere in the posterior urethra. These valves may be noticed at any age according to the time of onset of trouble. In most cases obstruction is incomplete and the time of onset and severity of obstruction vary.

Dilatation of proximal urethra, hypertrophy of bladder trabeculation, diverticulae, bilateral hydronephrosis are the usual consequences. These valves may be due to simple hypertrophy of normal folds and ridges of posterior urethra (Tolmatschew) or may be persistent remnants of urogenital membrane (Bazy). But the former view is the more accepted one.

Symptoms.—Vary with the degree of obstruction. Incontinence, dysuria, frequency with retention may be present. Long continued back pressure results in lowered renal function and uraemia sets in. Nausea, vomiting, diarrhoea, loss of weight, dizziness, drowsiness may occur ending in coma and death. Noticeable changes are: Trabeculation, cellulae formation, hydroureter, hydronephrosis, dilatation of proximal urethra, Renal destruction.

Diagnosis is best done by urethroscope. History of paradoxical incontinence with distended abdomen is sug-

gestive. A cysto-urethrogram should be done. Intravenous Ureselectan B is useful for diagnosis.

Treatment.—As there is some damage to kidneys it is advisable to decompress the bladder gradually by suprapubic or urethral catheter and then deal with the valves. Best is to pass a urethral catheter and decompress and then do a cysto-urethrogram. Young's punch size 17 F can be used for punching out the valves. Supra-pubic cystotomy is done and diverticulum excised and a sphincterotome used for cutting the valve, (Geraghty) by passing the latter per urethra and finger from above as guide. Congenital hypertrophy of verumontanum may also produce hydronephrosis or pyonephrosis by causing obstruction to urinary flow.

Functional diseases of prostate.—Neurosis and sexual abnormalities are frequently seen. These may result from chronic inflammations of urethra and prostate in some, in others a long history of masturbation or other perverse sexual excitement may be present.

Symptoms.—Diminished or complete absence of libido, erections or ejaculation. Pain during or after ejaculations. Night emissions. Bleeding after or with ejaculations in cases of congested and swollen verumontanum. Phosphaturia. Referred pains in the perinium, rectum, thigh, buttocks, legs, etc. Marked neurasthenia and grave mental distress may be present. The prostate may be swollen, boggy and secretion obtained by massage contains a greater number of leucocytes. Prostate may be tender and seminal vesicles and vasa may show thickening. In other cases prostate may be normal. In some, verumontanum may be congested, and enlarged, and ejaculatory ducts may be patent having lost their tone. In some the ejaculatory ducts may be stenosed.

Diagnosis should be done with the aid of a psychiatrist. Rectal examination, study of prostatic and seminal discharge, urethroscopic examination with probing of ducts should be done. Posterior urethra is distended with lipiodol and roentgenograms studied.

Treatment has to be mental, local and general.

Local.—Prostatic massage with stripping of seminal vesicles and vasa followed by injections of weak solutions of dye-antiseptics, about once a week. Urethroscopic treatment of verumontanum:—Dilating the ducts and injections of weak antiseptic solutions, painting the congested verumontanum with 10-20 per cent silver solution once or twice. Irrigating urethra with sterile cold water, rectal cold water lavage, cold water hip baths are good stimulants for libido. Diathermy.

General.—Tonics, strychnine, yohimbin, etc., may be tried.

Mental.—A psychiatrist should treat this condition.

These cases provide the patent medicine-vendors with a very good and fruitful field.

Retention cysts of Prostate.

These occur as single cysts of varying sizes or as small multiple ones. Single cysts most commonly occur on the anterior or lateral margins of vesicle outlet projecting into bladder and may be sessile or pedunculated. The small multiple cysts may be found anywhere in the prostatic urethra. These are all retention cysts from blocking of ducts of prostatic or urethral glands. The larger ones give rise to gradually increasing obstruction and even complete retention in pedunculated type. Symptoms resemble those due to enlarged prostate, and may be associated with residual urine, trabeculation,

cellulae formation and retention. Haematuria may occur from straining or from rupture of cyst into bladder. They are thin walled and translucent. Multiple cysts are small and occur anywhere in the prostatic urethra. They are retention cysts with thin walls containing serous exudate and are translucent. These may be seen as water-blisters at vesical outlet or prostatic urethra from oedema of mucosa. These small ones may cause no symptoms or only burning and frequency with occasional presence of R. B. Cs.

Cystic dilatation of utricule may follow stricture of its outlet or blocking of its mouth by polypoid growths. When small it causes prominence of upper part of verumontanum. When larger it projects upwards under the trigone causing prominence of trigone and may also project towards the rectum. It may produce pressure on the ejaculator ducts or even of the ureters causing hydronephrosis.

Diagnosis.—Rectal examination may show a prominent cystic tumour at upper part of prostate or as a tumour of lateral lobe. Other cysts can be seen only by retrograde cystoscope and urethroscope. To see translucency it is necessary to bring the telescopic eye near the cyst when it appears translucent unlike solid prostatic adenoma.

Treatment.—(1) Vigorous prostatic massage against a sound inside may rupture smaller cysts. (2) Supra-pubic cystotomy and excision of cyst and enlarged prostate if present. (3) Removal by operating cystoscope with rongeur or diathermy fulguration. (4) Removal by Young's perineal route may be done. (5) Cysts of posterior urethra are best dealt with through a urethroscope. (6) For cyst of utricule, its mouth is dilated after punching out polyps and emptied and then an antiseptic solution is injected.

Congenital hypertrophy of vesical sphincter may be present in children but not pronounced enough to give

rise to severe symptoms. The child may have some difficulty and frequency of micturition. It may reach adult life when added inflammatory changes may give rise to definite symptoms. Urethroscope will show a bar in the median portion of prostate. Treatment for this is punching out the bar.

Injuries of the Prostate.

These may vary from contusion to partial or complete rupture and extensive lacerations with trauma to other viscera. The commonest causes are crush injuries with fractures of pelvis, particularly the pubic rami or from gun-shot wounds. The prostate may be sometimes torn off from membranous urethra. The second type of trauma is usually instrumental as sounds, lithotrite, cystoscopes, etc. False passages are the commonest results, specially in prostatic hypertrophy from steel catheters.

Complications.—(1) Haemorrhage slight or severe from instrumentation. The clots fill prostatic urethra and blood passes into bladder and clots which if large may cause obstruction to urination. In mild types terminal haematuria may result. If membranous urethra is also torn, blood may present at the meatus.

(2) In crush injuries prostate and sheath may be torn, and blood with urine extravasate and extend in several directions. *Anterior tear:* The space of Retzius is first invaded and then it may pass upwards under the abdominal muscles to the costal margin and laterally to the loins. Owing to the attachment of urachus and obliterated hypogastric arteries firmly to the peritoneum, extension to middle line is not so great as into the flanks. *In lateral ruptures* extravasation may pass into the ischio-rectal fossae and appear as tumefaction below the level of triangular ligament, in the perineum, or even into the buttocks and thighs.

Posterior ruptures.—Extravasation may be only retro-vesical where the anterior layer of Denonvillier's fascia is not torn, but where it is torn extravasation will be retro-peritoneal and extend upwards into pelvic space. If both layers of the fascia are torn extravasation will pass round the rectum and upwards into the retro-peritoneal space. These extravasations soon get infected and cause grave dangers. Unless there is rupture of triangular ligament no tumefaction occurs in the upper part of perineum. In these there is fracture of pubic rami. Later complications are periprostatic infection, abscesses, formation of calculi, false passages, etc.

Symptoms depend on the nature of injury, extent, position and attendant complications. Instrumental trauma may be slight or severe and may give rise to symptoms of extravasation and infection.

In partial reatures urine may be blood stained and urination difficult and in extensive clotting it may be obstructed. In complete rupture bleeding is severe and prostate may be pushed upward by a couple of inches. Rectal examination may show a boggy swelling. If fracture is present fragments may be felt. In retention of urine by spasm of vesical sphincter a distended bladder pushed well up by extravasated blood is appreciable.

Diagnosis.—History of instrumentation followed by chill, fever, difficulty of urination and bleeding indicate false passage and extravasation. In crush injuries variable amount of shock, inability to void urine and an increasing mass in hypogastrium suggest rupture of prostate and extravasation of blood or urine or both. There may be little or no blood at the meatus depending on whether membranous urethra and triangular ligament have been injured or not. A rectal examination of prostate, triangular ligament and periprostatic tissues should be done. X-rays will be of help in showing the extent of pelvic fracture.

Treatment.—If symptoms are mild after instrumental damage expectant treatment is best. But if retention or great difficulty in urination is present a suprapubic cystotomy and drainage is indicated specially if great damage is suspected.

Where rupture is extensive and extravasation is present both perineal and prevesical drainage should be done. In early cases an attempt at suturing the tear and establishing continuity of urethra round a catheter brought out in the perineum should be done. This should be done as early as possible especially in complete rupture of urethra. In fractures of pelvis, loose fragments are best removed at the same time and a reduction of other fragments into their normal position attempted and pelvis immobilised.

In extensive extravasations which usually get infected the entire area should be suitably drained even up to the ribs and lumbar regions by through and through drainage; for irrigation with antiseptics 1 per cent solution of mercurochrome 10-20 c.cs. intravenously should be tried in these cases. Later complications as stricture, fistulæ, etc., require surgical treatment. Where complete obliteration of urethra has occurred, the part should be exposed as early as possible and scar excised and a plastic operation of urethra over a catheter is done, suprapubic drainage being kept up till healing has taken place.

Prostatic Calculi

1. Renal calculi travelling down may be held up in prostatic urethra and develop there and cause trouble.
2. Sometimes stones may form in a dilated prostatic urethra behind a stricture.

Either of these may slip back into the bladder. Sometimes it may grow upwards and develop an intra-vesical

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part forming a dumb-bell shape calculus, with an imprint of sphincter, middle lobe and verumontanum.

3. Intrinsic stones of prostate usually form in the acini and are supposed to arise from corpora amylacea. Obstruction to ducts is an important factor, from chronic inflammation or hypertrophy of lobes. But they may be found in young people without history of inflammation or enlargement of prostate.

Symptoms.—The first two types cause frequency of micturition, irritability, pain, haemorrhage or urinary obstruction. Pain is referred to tip of penis. The intra-prostatic ones may be symptomless. In some there are sexual disturbances, irritability, local and referred pain or symptoms of senile hypertrophy may be present. On rectal examination the prostate may feel nodular, in some, stones may be palpated and crepitus elicited if multiple. These calculi sometimes may ulcerate into the urethra, sometimes periprostatic inflammation and infiltration occur and occasionally fistulas may form. Roentgenogram is a necessity in these cases for differentiation from carcinoma, tubercle, etc., of prostate.

Treatment is indicated only if symptoms are present. Small urethral calculi may be pushed into the bladder and lithotrity done. For prostatic calculi the perineal route of Young is the best, as often inflammatory, or adenomatous conditions are present which can be dealt with at the same time. The long urethral tractor should be used for pulling down the prostate. After opening the prostatic capsule the stones can be curetted out and adenoma dealt with. Large urethral stones should also be dealt with by the perineal route. Strictures of urethra if present should be dealt with first.

Prostatitis.

(1) **Gonorrhoeal:** follows in the course of specific urethritis, infecting posterior urethra, ducts and glands and interstitial tissue. In the 4 glass test the prostatic discharge will be found in the 2nd glass and nothing seen in 3rd and 4th glasses. In 50 per cent of gonorrhoeal cases the prostate gets involved.

In many the disease is mainly confined to posterior urethra and its glands, the greater part of prostate escaping, prostate not being found enlarged. Where the whole gland is involved it is found to be enlarged, painful and tender in acute stages. The ejaculatory ducts, seminal vesicles, and ampullae of ductus deferens and often the epididymis are consecutively involved. The bladder is rarely infected, but the trigone and mucosa of vesical neck may be involved (collicystitis).

Pathology.—Both glands and interstitial tissue are involved in varying proportion. In acute infection, abscesses may form which may rupture into the urethra, remain confined to the prostate or rupture into periprostatic tissue. Commonly however the acute inflammation is self-limited and subsides leaving chronic inflammation, round cell infiltration and fibrosis. The prostate becomes a focus for infection of urethra now and then or gives rise to fibrositis and joint trouble.

Symptoms.—Posterior urethritis is indicated by increased discomfort, pain, frequency of micturition and even complete retention, but if chronic may give rise to no symptoms referable to the part.

Treatment.—Urethro-cystic lavage is done and mercurochrome 10-20 c.cs. of 1 per cent solution per 100 lbs. body weight is given every four days intravenously. Rectal lavage of hot water, sitz bath are useful in acute prostatitis. For retention suprapubic puncture with a

needle about the size of a hat-pin which may be repeated if necessary is the best. Abscesses of prostate are best drained by perineal route.

(2) Other organisms may also cause prostatitis especially pyogenic ones on an old gonorrhoeal infection. This may occur from use of instruments. Catheter chills and fever are due to out-pouring of bacteria into circulation during instrumentation. Blood cultures are positive in these. It may be infected from a non-specific urethritis or as a descending infection from pyelonephritis, cystitis or blood borne one, as *B. typhosus*. Organisms can reach it through blood, lymph, vas or from urethra. It may be infected from rectum and adjacent structures. Mild inflammatory changes are called catarrhal prostatitis where interstitial substance is not involved, in severer attacks both acini and inter-acinar substance is involved and may end in abscesses or in periprostatic infiltration. The abscesses may open into urethra, bladder, perineum or work their way into perirectal tissues.

This inflammation eventually involves the ejaculatory ducts, seminal vesicles, vas and sometimes epididymis. Inflammatory changes in the posterior urethra, verumontanum, and utricle also occur. Often collicystitis and sometimes cystitis may follow. The condition may become chronic with attendant changes as pericystitis, etc., of bladder. Chronic collicystitis may end in annular contracture of neck of bladder or bar formation from fibrosis. Ascending lymphatic infection of renal and perirenal tissues or blood infection of joints, neuritis, fibrositis myocarditis or a toxæmia may result. The prostate is an important septic focus for auto-infection. Massage in some cases may be negative, in others two or three massages may be necessary before pus cells would appear in the discharge and cultures could be made. Periprostatic infiltrations finally end in extensive adhesions.

Prolonged sexual excitation frequently repeated and especially without gratification as occurs in masturbation, coitus interruptus, etc., is liable to produce repeated excessive congestion of prostate and verumontanum, ultimately ending in chronic prostatitis and fibrosis.

Symptoms.—In some chronic cases there may be no local symptoms. In others pain, a feeling of discomfort in the perineum and rectum, frequency of micturition and sometimes difficulty in voiding may be complained of. Referred pains are common in all types—in the small of back, buttocks, thighs and groins. These are more often seen in the chronic cases with adhesions.

Sexual symptoms often outweigh the local ones and are associated with changes in verumontanum, ejaculatory ducts and seminal vesicles. Either a precipitate ejaculation or apparent incompleteness of ejaculation may occur, the former may be so quick as to precede introitus. Other impairments of sexual functions are;—impairment of sexual desire, poor erection the patient considers himself as impotent. This produces mental changes and ends in neurasthenia and mental distress. These conditions are curable with complete restoration of libido. Hence a careful study of symptoms is necessary. Psychasthenias have to be treated for local and mental conditions.

Vesical symptoms depend on the extent of involvement of bladder and the complications present. Mild infections cause no symptoms. In the more pronounced types, frequency, irritability and even strangury are present. If the vesical outlet is involved frequency and terminal pain may be present. Later from chronic fibrosis symptoms of prostatic obstruction may be complained of.

Remote symptoms due to focal sepsis from chronic prostatitis are myo-fibrositis, rheumatism, arthritis, myocarditis, etc.

Diagnosis.—A searching examination of prostate is required. In acute and sub-acute conditions a rectal examination will show a tender, swollen and enlarged prostate. In chronic cases a rectal examination in the knee elbow position should be done. The anal sphincter, perineum, rectum, triangular ligament, cowper's glands, membranous urethra, the lobes of the prostate, seminal vesicles, the posterior wall of bladder, and surrounding tissues are examined seriatim. The degree of induration is also noted and these are charted out. Third degree of induration means carcinoma. Next stripping with firm pressure from above downwards and from the sides towards the urethra is done. Discharge may appear at the meatus, if not milking of urethra downwards is done. If the discharge is to be cultured, prior to the examination and stripping it is necessary to clean the glans with an alcohol swab and wash the anterior urethra by a mild antiseptic 1/500 mercoxyl or sterile normal saline. The discharge should be received direct into a sterile test tube and then on a couple of slides. If discharge appears, patient is asked to void a little urine in a glass and the second part is received direct into a sterile test tube for culture purposes. The contents in the glass are centrifuged and deposit stained for organisms, etc. In many cases of chronic prostatitis especially from sexual excess or irregularity no organisms may be isolated. Chronic bacterial infections have a self-sterilizing effect, but may leave behind local, vesical, sexual and referred symptoms and grave neurasthenia. Endoscopic examinations should be done—granulations, polyps or stricture of ejaculatory ducts, etc., may be seen. Cystoscopic examination for condition of trigone, neck of bladder is also done.

Treatment.—In acute cases intravenous antiseptics, if abscesses be present drainage of prostate. In some chronic cases drainage of prostate and vesiculotomy by perineal

route is indicated (Fuller's). Vasotomy and irrigation from above may also be done. In chronic conditions prostatic massage and evacuation of vesicles and prostate followed by irrigation of urethra by penetrating dye-antiseptics is carried out once in 4 days. After 4 weeks an endoscopic examination is done. Granulations and polyps if small are cauterised by Silver nitrate stick once, if larger fulguration is used. If stricture of ejaculatory ducts is suspected, they are probed and where indicated are gently dilated with conical probes. These are done once a week followed by massage treatment again. Rest is given for 4 weeks then another course follows. Help of a psychiatrist is necessary in sexual neurasthenic cases and patient has to be convinced that a cure is likely. Vaccines in addition to intravenous antiseptics are tried if organisms have been isolated. Protein shock treatment by milk or casein may also be tried.

(To be continued).

Basal Metabolism of Young College Students, Men and Women, in Madras.

(BY CAPTAIN B. T. KRISHNAN,

ASSISTED BY C. VAREED.

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It has been the practice in India, to use, in the determination of basal metabolic rates, one or the other of the normal standards of Aub and Du Bois, Harris-Benedict and Dreyer, for comparison, and pronounce the rates to be above or below normal. These standards were based entirely on the determinations made in America, and E. F. Du Bois in his 'Basal Metabolism in Health and Disease' observes 'we know rather little about the differences in the metabolism of different races and, as a matter of fact, almost all the determinations that we have used have been made in America or Germany.'

Having regard to the climate of India, and to the well recognized differences in race, general physique and diet of the people, it is of great importance that basal metabolic determinations should be made exclusively in this country, in different areas on a number of normal men and women of different ages, and that standards applicable to India be laid down, so that real variations in disease and other abnormal conditions may be known. An individual in this country may show a basal metabolic rate which varies plus or minus 10 per cent from the predicted normal according to the western standard, and yet be normal.

There seems to be no unanimity in the adoption of any particular standard even in the West. In America Aub-Du

^{*} Abridged from the Indian Journal Medical Research, XIX, January 1932, pp. 831-836.

Bois' standard is favoured. In Germany and other parts of the continent Harris-Benedict's prediction tables are preferred, and in England Dreyer's figures are employed as a rule. August Krogh observed in 1923 'the Harris-Benedict prediction tables for basal metabolism are, owing to their statistical nature, less reliable for persons of exceptional build or higher age. The Du Bois' method gives results which on an average are too high (4 per cent or more), but less likely to fail on exceptional subjects.' According to E. F. Du Bois, the Dreyer's method possesses no material advantage over the Harris-Benedict's, and reports on adults are better made according to both the Sage and Harris-Benedict standards. Grafe, one of the most experienced investigators, averaged the two. August Krogh (1925) modified Aub-Du Bois' figures by making a uniform reduction of 6 per cent. J. T. King, in his monograph on basal metabolism, observes that workers in metabolism would do better to select normal standards for their use, from observations made under conditions as nearly as possible similar to those under which they plan to work.

So far as I could gather from the literature available, very little work has been done in India to indicate the probable standards of basal metabolism for Indians. Mukherjee in 1926, in a brief note, reported in the *Journal of American Medical Association* that the basal metabolism of fifteen Bengali medical students averaged 9 per cent lower than the generally accepted standards, and again he and Gupta report in the *Indian Journal of Medical Research* (January, 1931) that the basal metabolism of eighteen Bengali men from 20 to 29 years of age averaged 13.5 per cent lower than the Du Bois standard. Sokhey in 1927 reported at the Seventh Congress, Far Eastern Association of Tropical Medicine, that fifteen of his subjects at Bombay showed a basal metabolic rate 10 to 23 per cent lower than the Du Bois standards.

So, with a view to make a beginning in the finding of normal standards for South India, data were collected, on 76

men and women of ages ranging from 18 to 25, coming from different districts. The subjects were all medical students who were having or had had a course of lectures on the subject of metabolism, and so were acquainted with the apparatus and the conditions necessary for an accurate determination. It is said that the science of metabolism has been founded on the very bodies of medical students and physiologists and, as a matter of fact, they are the persons who are readily available for such investigations and serve as normal controls.

The basal metabolism determinations were made in the mornings between 8 and 10 A.M., 14 to 18 hours or even 20 hours in a few cases, after the last meal, the subjects having had according to instructions an evening meal at 6 P.M. or earlier and no breakfast next morning till the basal metabolism determinations were made. All the subjects were either carried by car from their residences to the Laboratory in the morning or were asked to spend the night at a convenient place where the determinations could be done in the morning. Before each determination, complete muscular relaxation by lying down on improvised cots for 30 to 45 minutes was insisted upon. It was observed that there was no appreciable difference in the results whether the method adopted, to secure the subjects for the determinations was ambulatory or retention overnight at the place where the tests were made, so long as 30 to 45 minutes' rest was given before the determination.

Three determinations were made in each case on two different days, the second and the third having been made on the same day, as there was difficulty in securing the subjects under basal conditions on more than two different days.

Apparatus used was the latest model of Benedict-Roth's with rubber flutter valves and with the Collin's Kymograph attachment. In this apparatus, the bell has a standard capacity of 20.73 c.c. per mm. of height. This amount of oxygen (at the average calorific value of 4.825C. per litre with R. Q. 0.82)

equals 0.1C. Therefore 1 mm. fall in 6 minutes represents 1C. per hour, subject to the normal standard corrections for temperature, pressure and moisture. Tests for leaks and unabsorbed carbon dioxide in the bell were often made.

The body surface in all cases was computed from the charts devised by Aub-Du Bois based on height-weight formula.

$$A = W^{0.425} \times H^{0.725} \times 71.84$$

About 230 basal metabolism determinations were made on 76 men and women (three tests on each subject) of 18 to 25 years of age and the summaries of the results for men and women according to ages are embodied in Tables I and II.

It would be seen that the figures in Table I based on the minimum of three readings, stand at a lower level than the figures in Table II based on the average of the three readings. According to Du Bois, the lowest two tests which agree closely represent the true basal. Macleod and Rose (1925) selected their lowest observation of basal metabolism as the true basal value. Paul Roth says: 'In a series of tests made the same day or within a few days all conditions being equal, the lower basal rates obtained should always be considered as probably the more correct ones. With good technique, it is next to impossible for any subject to develop a rate lower than his true basal rate, while it is obvious, that in any case whether the results are high or low, there is always an easy chance for the rate observed to be higher than the true basal.'

In view of the above observations which are quite true, figures in Table I only will be used for further discussion in this paper and comparison with the Western standards.

Basal metabolism in men.—The basal metabolic rate recorded for age 18 in men is 39.8C. per sq. m. per hour. This rate stands at a much higher level than the rates recorded for years 19 to 25, deviates only by 3 per cent from Aub-Du Bois' standard and is above the Harris-Benedict, Dreyer and Krogh's values by 0.6, 2.3 and 1.0 per cent respectively. But as the

TABLE I.
Summary of basal metabolic rate determinations on 73 young men and women according to ages.
(Taking the minimum of three readings as a rule.)

Age. Years.	MEN.					WOMEN.					Difference between men and women per cent.		
	Number of cases done.	Average basal metabolic rate per sq. m. per hour.	AVERAGE DEVIATION OF ACTUAL FROM PREDICTED PER CENT.			Number of cases done.	Average basal metabolic rate per sq. m. per hour.	AVERAGE DEVIATION OF ACTUAL FROM PREDICTED PER CENT.					
			Aub-Du Bois's standard.	Harris-Benedict's standard.	Dreyer's standard.			Kroggh's standard.	Aub-Du Bois's standard.	Harris-Benedict's standard.		Dreyer's standard.	Kroggh's standard.
18	4	39.8	- 3.0	0.6	- 2.3	1.0	...	...	...	...	...	...	- 8.5
19	5	34.6	-15.5	-11.9	-13.7	-10.8	1	31.6	-16.5	-15.1	-16.0	-14.3	-26.8
20	8	36.6	- 7.6	- 7.0	- 7.6	- 4.2	1	26.8	-27.5	-30.4	-28.4	-24.3	-12.5
21	12	35.1	-11.3	-10.4	-11.6	- 8.0	4	30.7	-16.9	-21.2	-19.0	-16.7	- 8.2
22	11	34.0	-14.0	-12.3	-13.7	-10.3	3	31.3	-15.3	-17.0	-17.1	-10.5	- 8.2
23	13	34.1	-13.7	-12.6	-13.1	-10.0	5	31.3	-15.7	-15.9	-15.1	-10.5	- 8.2
24	4	34.9	-11.7	- 9.6	-11.5	- 6.6	1	34.2	- 7.0	-12.1	- 8.8	- 1.7	- 2.0
25	1	36.5	- 7.7	- 5.2	- 9.5	- 2.3	...	...	...	...	...	...	...
Average for 20-25	58	...	-11.6	-10.0	-11.3	- 7.6	15	...	-16.2	-18.2	-17.1	-12.7	...
Average for 19-25	49	34.8	-11.8	-10.7	-11.7	- 8.2	14	31.0	...	...	...	...	...
	54	34.8	-12.0	-10.8	-11.9	- 8.4	15	31.0	...	...	...	...	-11.0

TABLE II.
Summary of basal metabolic rate determinations on 73 young men and women according to ages.
(Taking the average of three readings as a rule.)

Age, Years.	MEN.					WOMEN.					Difference between men and women per cent.	
	Number of cases done.	Average basal metabolic rate per sq. m. per hour.	AVERAGE DEVIATION OF ACTUAL FROM PREDICTED PER CENT.			Number of cases done.	Average basal metabolic rate per sq. m. per hour.	AVERAGE DEVIATION OF ACTUAL FROM PREDICTED PER CENT.				
			Aub-Du Bois's standard.	Harris-Benedict's standard.	Dreyer's standard.			Krogh's standard.	Aub-Du Bois's standard.	Harris-Benedict's standard.		Dreyer's standard.
18	4	41.3	0.4	4.2	1.0	5.2	...	...	...	...	...	...
19	5	36.6	-10.7	-6.8	-8.6	-5.6	1	31.6	-15.1	-16.0	-14.3	-13.6
20	8	38.2	-3.4	-2.8	-3.5	...	1	28.6	-22.5	-23.5	-19.2	-25.0
21	12	36.8	-7.1	-6.0	-7.4	-3.7	4	32.3	-12.6	-14.2	-8.6	-12.2
22	11	35.9	-9.1	-7.1	-8.6	-5.2	3	32.8	-12.9	-14.7	-6.2	-8.6
23	13	36.3	-8.3	-7.0	-7.6	-4.2	5	32.1	-13.4	-13.0	-8.2	-11.5
24	4	36.6	-7.4	-4.9	-7.5	-2.2	1	35.8	-3.1	-3.6	-2.8	-2.1
25	1	37.4	-5.4	-2.8	-7.2	...	...	...	...	...	...	...
Average for 20-25	58	...	-7.0	-5.2	-6.7	-3.0	15	...	-13.2	-13.9	-8.3	...
Average for 19-25	49	36.7	-7.2	-5.8	-7.0	-3.3	14	32.3	...	...	...	-12.0
	54	36.7	...	...	...	...	...	32.3	...	...	...	-12.0

figure is based on determinations on four subjects only, it cannot represent the true rate for the age 18 in this country. The rate would probably be less if a larger number of subjects be used. However, the rate recorded indicates that basal metabolism at the age of 18 stands at a high level and there is a distinct lowering of the basal metabolism after 18.

For age 19, the average basal metabolic rate is found to be 34·6C. which is very low when compared with the rate for age 18. But again, as only five subjects of 19 years of age were used, the rate is not established. It is probable that the rate would be higher if a larger number of tests be done.

For age 20, eight subjects were used, and the rate is found to be 36·6C. After the distinct lowering of basal metabolism after the 18th year, it is not probable that there would be much difference in metabolism in the 19th and 20th years of life, and so if an average of the determinations on all subjects (13) of 19 and 20 years of age be taken, the rate would be 35·8C. per sq. m. per hour. This would represent more or less the true basal metabolic rate for 19 and 20 years of age.

For age 21, determinations were made on 12 subjects, for age 22, on 11 subjects, and for age 23 on 13 subjects and the average basal metabolic rates calculated are 35·1C, 34·0C. and 34·1C. respectively per sq. m. per hour. These rates may be considered to be more or less established as they are based on determinations on a larger number of cases.

For ages 24 and 25, the subjects were again few and the results cannot be taken to represent the true averages, but as the basal metabolism at these ages will not differ much from the metabolism at 22 and 23 years of age, a probable rate 34·0C. may be safely predicted.

Judging from the results for ages 19 to 25, and having noted the basal metabolism at 18 to be at a high level, the rate for the age 18, may also be predicted to be about 37·0C. per sq. m. per hour, which would be 1·2C. above the rate for age 19.

So the basal metabolic rates for ages 18 to 25 actually calculated or predicted, and applicable to South India, may be laid down as follows :—

Age. Years.	Du Bois' standard Cal.	Krogh's standard. Cal.	Basal metabolic rate per sq. m. per hour. Cal.
18 ...	41·0	39·4	37·0 predicted,
19 ...	41·0	38·8	35·8 observed,
20 ...	39·5	38·2	35·8 ..
21 ...	39·5	38·2	35·8 ..
22 ...	39·5	37·9	34·0 ..
23 ...	39·5	37·9	34·0 ..
24 ...	39·5	37·4	34·0 predicted,
25 ...	39·5	37·4	34·0 ..
Average ...	39·8	38·1	34·96

Average deviation from Du Bois' standard ... 12·1 per cent.

" " " Krogh's " " 8·2 ..

The basal metabolic rates could be given in more rounded figures and adjusted as below :—

Age. Years.	Du Bois' standard. Cal.	Krogh's standard. Cal.	Basal metabolic rates applicable in South India per sq. m. per hour. Cal.
18 ...	41·0	39·4	37·0
19 ...	41·0	38·8	36·0
20 ...	39·5	38·2	35·5
21 ...	39·5	38·2	35·0
22 ...	39·5	37·9	34·5
23 ...	39·5	37·9	34·5
24 ...	39·5	37·4	34·0
25 ...	39·5	37·4	34·0
Average ...	39·8	38·1	35·0

Average deviation from Du Bois' standard ... 12·0 per cent.

" " " Krogh's " " 8·1 ..

The average for ages 19 to 25 according to the prediction works out to be 34.8C. per sq. m. per hour, which is the same as the calculated average in Table I, and the average for ages 18 to 25 to be 35.0C. per sq. m. per hour. This average deviates —12 per cent from Aub-Du Bois, —10.8 per cent from Harris-Benedict, —11.9 per cent from Dreyer and —8.1 per cent from Krogh's modification of Du Bois' standard.

Basal metabolism in women.—Only fifteen women students (19 to 24 years) were available, one each of 19, 20 and 24 years of age and 3 to 5 cases each of 21, 22 and 23 years of age. The average basal metabolic rate for ages 21 to 23 (12 subjects in all) is calculated to be 31.1C. per sq. m. per hour and this may be taken as the probable average for those years. The general average calculated for all the fifteen subject is 31.0C. (Table I). In view of the low metabolic rates recorded for all the ages except in case of age 24, the rates for years 19 to 25 may be laid down as follows :—

Age. Years.	Basal metabolic rate predicted. Cal.	Krogh's standard Cal.	Du Bois standard. Cal.
19	32.0	35.9	38.0
20	31.5	35.4	37.0
21	31.5	35.4	37.0
22	31.0	35.0	37.0
23	31.0	35.0	37.0
24	30.5	34.8	37.0
25	30.5	34.8	37.0

This would give an average of 31.2C. showing a difference of 10 per cent from the figures for men in South India, and a deviation of —16.0 per cent from Du Bois, —18.0 per cent from Harris-Benedict, —17.0 per cent from Dreyer and —12.5 per cent from Krogh's standards.

CHART 1.

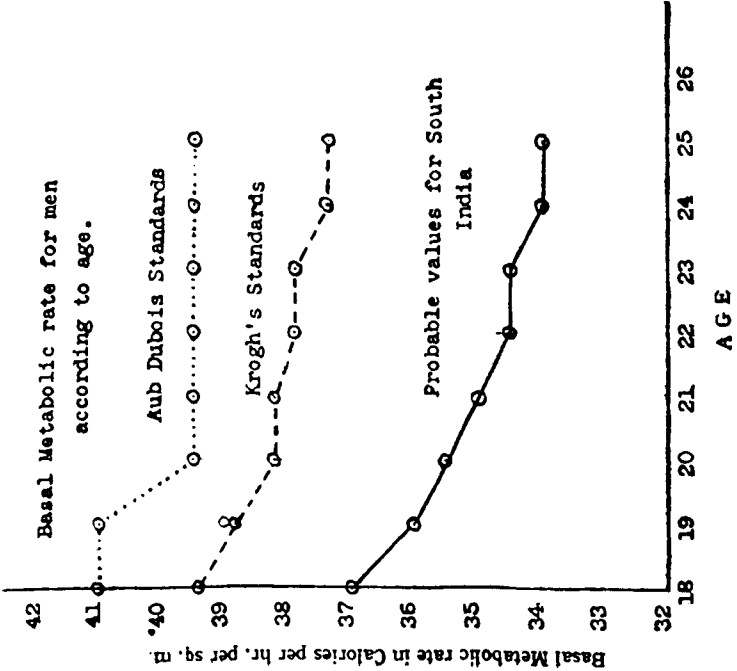


CHART 2.

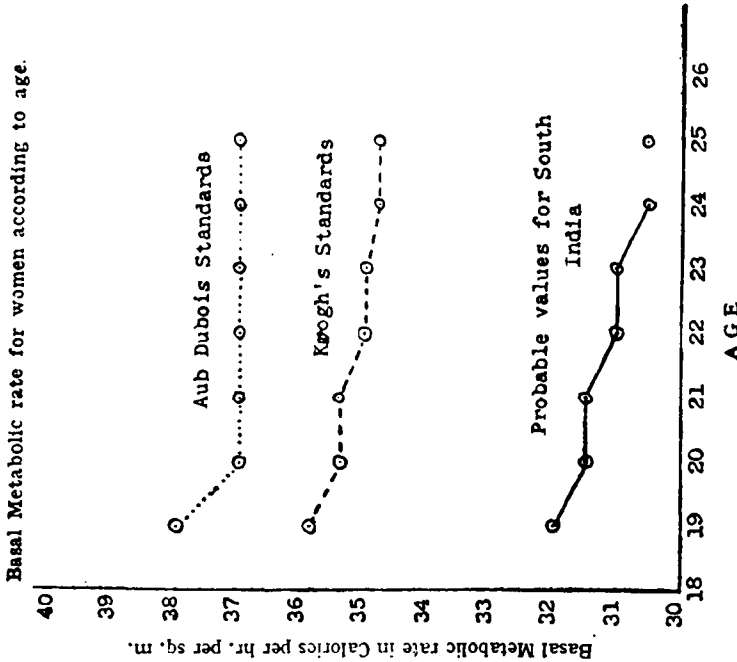


CHART 3.

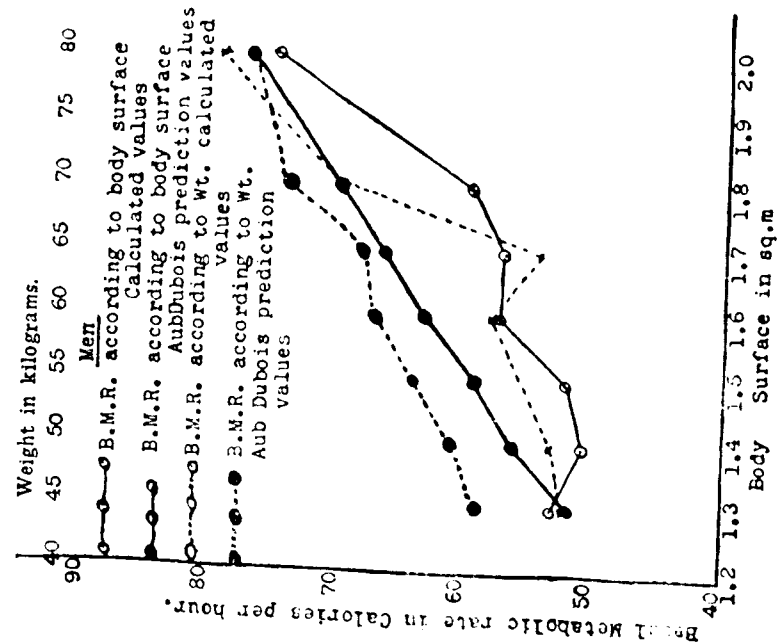
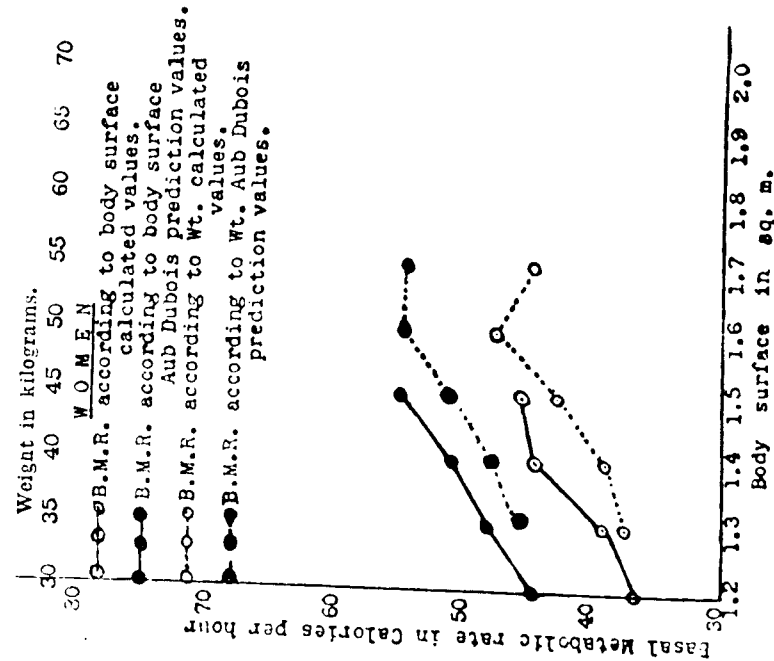


CHART 4.



In Charts 1 and 2 the level of basal metabolism and the variation according to age of the predicted values for men and women in South India, as compared with the Aub-Du Bois and Krogh's values are graphically represented. Charts 3 and 4 show graphically the variation of basal metabolism according to weight and body surface in South India as compared with Aub-Du Bois and Krogh's variations. No correlations between pulse rate and basal metabolism was found.

Discussion.—The deviations from Du Bois' values for men and women have been found to be —12 per cent and —16 per cent.

In 1923, August Krogh found the Du Bois' results on an average too high and in 1925 published Du Bois' tables with a uniform 6 per cent reduction.

According to E. F. Du Bois (1927), Aub and Du Bois' standards of 1917 are 6 per cent too high. F. G. Benedict believes that the present standards for American women are approximately 5 per cent too high.

Blunt and Dye (1921) studied 17 women between 24 and 44 years and found the figures averaged 4.1 per cent below the Harris-Benedict's and 6.5 per cent below the Aub-Du Bois' standards. Macleod and Rose studied 92 normal women between the ages of 20 and 50 years and the figures averaged 4.4 per cent below the Harris-Benedict's and 8.6 per cent below the Aub-Du Bois' values.

So, on an average, if the Du Bois' values are considered to be 6 per cent too high for Americans themselves we have still to account for —6 per cent and —10 per cent deviation in case of men and women respectively of South India.

The question whether the variation of basal metabolism in different parts of the world is due to racial differences has been investigated by several workers. Benedict and his collaborators

showed that the basal metabolic rate of a group of Oriental students living for a considerable time in Chicago under absolutely Western conditions was distinctly below Western standards. Macleod, Crofts and Benedict (1925) studied 7 Chinese and 2 Japanese women students who were in New York climate for 15 months. The basal metabolism was 10.4 per cent below Harris-Benedict and 10.2 per cent below the Sage standards. But as the standards were 5 per cent too high for American women themselves, the Orientals were still 5 per cent below. But Eijkmann (1896) working in far off Batavia could find no significant change in the basal metabolism of Malayan servants and the Europeans living in Batavia. A. Ozario de Almedia (1920) working in Brazil found the basal metabolism of the white men averaged 24 per cent below in one series and in another 16.2 per cent below the American standards and that of the Negro labourers was 8 per cent higher than the Whites but still below the figures in temperate zone. According to him, the basal metabolism depends not on race but on muscular work, level of food intake and the climate.

Knipping and Fleming (1923) working independently found the basal metabolism of Europeans, Malays and Chinese living for a long time in the tropics averaged 6.3 and 8.3 per cent below the Benedict's standards. Fleming also noted in the Philippines that one American, whose basal metabolism was 3 per cent below the standard, showed, on arrival in the Philippines, a fall to -7 per cent after 13 months' residence in the islands.

Takahira (1925) studied the metabolism of 120 Japanese men and women and reported that the average for men was 5.5 per cent below the Sage (Aub Du Bois) standards while the women were 7.3 per cent below. He did not believe that there was any significant difference between the two different races and all workers have to agree with him if 6 per cent reduction in the Aub-Du Bois' standard be accepted. The lowered metabolism in the Oriental students living in America, noted

by Benedict, Macleod and Crofts, must be due not to racial difference but to other causes which will be discussed below.

If the racial factor is eliminated, the lowered metabolism must be due to either climatic conditions or influence of diet or the general physique of the individuals.

Leonard Hill and other (1922) found the metabolism of children was 20 to 30 per cent higher in winter than in summer. E. Hindmarsh (1927), working in Sydney, found an average reduction of 9.6 per cent for the men and 10.9 per cent for the women from Du Bois' predicted values. He suggests that this reduced basal metabolic rate is due to the more ready relaxation of the subject in the warmer climate of Sydney. M. Heggerda and Benedict (1928) found male brown individuals in Jamaica had an average of 5.4 per cent below the American White average.

H. Necheles (1930) observed, during a prolonged stay in China, that the average Chinese is always more relaxed than the average Westerner. Their muscular tone seemed to be constantly lower than that of Westerners, which he conjectured, might be the reason for their lower basal metabolic rates. He confirmed the hypothesis by finding very little difference in their basal metabolic rate between waking and sleeping. With Westerner, there was considerable drop during sleep, indicating a high muscular tone and so a high basal metabolism in the waking state.

So there is evidence that the low basal metabolic rate of Orientals is at any rate partly due to a greater degree of constant relaxation. This relaxation is apparently due to the influence of the warm climate. If the climate of Sydney is sufficient to produce ready relaxation of the subjects as found by E. Hindmarsh, how much more responsible should the hot tropical climate of Madras be to produce relaxation of the subjects and lower their basal metabolism. Climate may not

affect metabolism directly but does indirectly, by the virtue of habits and activities acquired.

Another factor, which, I believe, plays a more important part in the maintenance of a high or low basal metabolism, is the influence of diet. Under-nutrition is an important factor in the reduction of basal metabolism. Krogh and Lindhard (1920-22) believe that the metabolism is distinctly lower if the previous diet has been low in protein. The average diet in South India, whether vegetarian or non-vegetarian, is deficient in protein and fat, the staple food being rice. The so-called non-vegetarians here, with a few exceptions, take very little meat, and ordinarily they have meat or fish or egg in a curried form three or four times a week or utmost once a day along with rice and vegetables.

The standards of basal metabolism in the West were devised for well-nourished people in good health and who take mixed diet. The larger the protein content in food, the higher is the basal metabolism (Lusk). It seems fairly conclusively proved that high calories and especially the quantity of protien taken has decided positive influence on basal metabolism. Kleitman has conclusively shown this by altering the previous daily diet and estimating the basal calories. In my series of cases, I have compared the basal metabolism of a few (7 cases) who were definitely known to be on a high protein diet and high calories (Table III) with that of an equal number practically of about the same weight and body surface, who were definitely known to be on a low protien diet (Table IV). The average basal metabolic rate of cases on high protien diet was 40.0 per sq. m. per hour, while that cases on low protien diet was only 31.9C., the average calculated or predicted for the whole series being 34.8C

So, accepting that the Du Bois' values are 6 per cent too high, a further reduction of 6 per cent in South India can be said to be due to the ready muscular relaxation in a hot tropical climate and a low protein diet.

TABLE III.
Basal metabolic rates observed in persons who were known to be on a high protein diet.

Number.	Number of sub- ject.	Age. Years.	Weight in kilo.	Sitting height cm.	Body surface sq. m.	Caste.	Diet.	Basal metabolic rate per sq. m. per hour. Cal.	Calculated aver- age for the age. Cal.	Aub-Du Bois' standard. Cal.	Predicted value for the age. Cal.
1	8	20	56.0	84	1.60	N. Br.	N. Veg.	41.1	36.6	39.5	35.5
2	27	20	52.7	86	1.64	A. I.	N. Veg.	39.9	36.6	39.5	35.5
3	59	21	69.5	88	1.81	Br.	Veg.	38.2	35.1	39.5	35.0
4	23	22	54.8	85	1.63	N. Br.	Veg.	38.3	34.0	39.5	34.5
5	4	23	62.0	87	1.65	Br.	Veg.	40.2	34.1	39.5	34.5
6	37	23	52.0	87	1.53	N. Br.	N. Veg.	41.6	34.1	39.5	34.5
7	57	23	80.9	92	1.96	Br.	Veg.	40.6	34.1	39.5	34.5
Average		...	61.1	87	1.69	...	...	40.0	34.8	39.5	34.8

TABLE IV.
Basal metabolic rates observed in persons who were known to be on a low protein diet.

Number.	Number of sub- ject.	Age. Years.	Weight in kilo.	Sitting height cm.	Body surface sq. m.	Caste.	Diet.	Basal metabolic rate per sq. m. per hour. Cal.	Calculated aver- age for the age. Cal.	Aub-Du Bois' standard. Cal.	Predicted value for the age. Cal.
1	30	20	54.0	88	1.63	N. Br.	Veg.	34.7	36.6	39.5	35.5
2	45	21	53.1	89	1.61	N. Br.	Veg.	32.5	35.1	39.5	35.0
3	51	22	56.5	91	1.66	Br.	Veg.	32.3	34.0	39.5	34.5
4	60	22	57.7	90	1.73	N. Br.	Veg.	29.5	34.0	39.5	34.5
5	39	23	65.0	88	1.78	N. Br.	N. Veg.	32.8	34.1	39.5	34.5
6	7	24	51.5	84	1.59	N. Br.	N. Veg.	32.1	34.9	39.5	34.0
7	9	24	52.0	84	1.30	N. Br.	N. Veg.	29.4	34.9	39.5	34.0
Average		...	55.7	85	1.65	...	...	31.9	34.8	39.5	34.6

Influence of exercise.—It is said that atheletic training pushes up the basal metabolic rate. Benedict and Smith found basal metabolism 6 to 7 per cent higher in athletes. Du Bois found 2.5 per cent higher than the Sage standards. Takahira also found higher basal metabolic rates in general labourers than in teachers and traders.

But in Florida, J. Titt (1930) found the average basal metabolism of ten women students engaged in athletics was the same as that of the whole mixed group. A. H. Heinhaus (1928) in his studies on the influence of exercise on basal metabolism in dogs, found no change as result of increased musculature in adult animals due to exercise. He observes that it is possible to train a sedentary animal to take strenuous exercise without after effects. A period of training sufficient to do this seems to have no effect on the basal metabolism either during the training period or afterwards, though there is a possibility that if very prolonged the basal metabolism may be lowered.

In Table V, I have shown the basal metabolic rates of a few of my subjects who were daily indulging in good exercise. Except in the first case, in all others the basal metabolism was practically the same as, or below, the predicted or calculated values for the ages. The average for the six cases recorded is distinctly lower than the calculated or predicted average for the mixed group.

In women also, a further reduction of 10 per cent can be explained as due to a low protein diet and the more marked muscular relaxation in the hot climate. As all the subjects were medical students, they had frequent exposure to open air and also indulged in some sort of exercise, walking or playing badminton or tennis, unlike most of their sisters in the middle and upper classes who hardly take any exercise and lead mostly an indoor life.

The low rates found by Macleod, Crofts and Benedict (1925) in Oriental women students resident in New York for

TABLE V.
Basal metabolic rates observed in men who were daily indulging in fairly severe exercise.

Number.	Number of subject.	Age, Years.	Weight in kilo.	Sitting height cm.	Body surface sq. m.	Caste.	Diet.	Basal metabolic rate per sq. m. per hour. Cal.	Calculated average for the age. Cal.	Aub-Du Bois standard. Cal.	Predicted value for the age. Cal.
1	25	21	72.0	98	1.95	A. I.	N. Veg.	36.6	35.1	39.5	35.0
2	34	21	54.0	83	1.58	I. C.	N. Veg.	35.6	35.1	39.5	35.0
3	24	23	61.0	93	1.73	A. I.	N. Veg.	30.0	34.1	39.5	34.5
4	46	23	57.2	81	1.62	Moh.	N. Veg.	34.4	34.1	39.5	34.5
5	55	23	63.2	87	1.68	Br.	Veg.	30.1	34.1	39.5	34.5
6	56	23	61.4	85	1.75	Br.	Veg.	30.0	34.1	39.5	34.5
Average		...	...	...	...	...	...	32.8	34.8	39.5	34.7

fifteen months, compared with the rates in American women, could be explained by the fact that the Oriental students continued to have the same or a less degree of muscular relaxation they used to have in their country and probably also by the fact, that they were not having the same quantity of food as their American companions had, as they were new to the diet.

Du Bois (1917) calculated the figures for females as 7 per cent below the average for males. Stoner (1924), using Dreyer formula, subtracted 10 per cent for the females. E. F. Du Bois says that sex difference is probably greater in Orientals. Takahira in Japan found the basal metabolism in women averaged 9 per cent lower than that of the men, according to surface area. In my series, the average basal metabolic rate for women is found to be 10 per cent below the average for men.

Influence of menstruation.—Undoubtedly the menstrual cycle has a profound disturbing effect on metabolism in women. F. G. Benedict and Finn (1928) found oxygen consumption

lowest during the menstrual period and highest one week after menstruation. Menstruation is therefore a real factor in lowering metabolism. R. F. Matters in Australia (1929), from a study of two normal female subjects, found there was a rise in standard metabolism immediately before menstruation and a fall during menstruation.

In Table VI the basal metabolic rates in relation to the menstrual cycle are shown. In my series, no determinations were made during menstruation. In one case aged 21, two days after menstruation, the basal metabolic rate was only

TABLE VI.

Basal metabolic rate of normal young women showing its relation to the menstrual cycle.

Number of subject	Age, Years.	Standing height cm.	Weight in kilo	Body surface sq. m.	Day after last menstruation	Basal metabolic rate per sq. m. per hour, Cal.
65	19	159	51.8	1.51	10	31.6
66	20	153	40.5	1.33	18	26.8
62	21	154	46.4	1.41	22	28.5
64	21	150	43.7	1.35	11	34.0
67	21	140	37.3	1.20	7	30.5
68	21	161	37.3	1.34	2	29.8
63	22	150	53.2	1.47	10	29.8
69	22	150	46.4	1.38	11	31.5
76	22	156	50.9	1.49	6	32.6
70	23	150	35.0	1.23	18	30.2
72	23	150	49.1	1.42	15	25.6
73	23	151	56.4	1.51	22	31.0
74	23	162	50.0	1.52	9	30.0
71	23	163	46.4	1.47	13	29.5
75	24	150	38.7	1.27	26	34.2

29.8C. the normal average calculated for the age being 30.7C. and the predicted value being 31.5C. per sq. m. per hour, showing thereby that basal metabolism continues to be low for a few days after menstruation. Subject No. 75 aged 24 on the 26th day after menstruation had a high rate of 34.2C. when the predicted value is 30.5 and the total average 31.2. This shows a rise in basal metabolism in the pre-menstrual period.

It may be gathered from the figures in Table VI, that on the average, though there is no uniformity, there is a rise during the second week and a decline during the third week after menstruation. There is a pre-menstrual rise again and then a fall during the menstruation which continues probably for a week after.

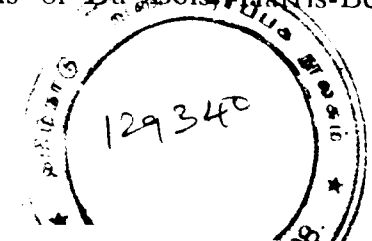
SUMMARY.

With a view to find normal standards of basal metabolism for men and women in South India, data were collected on 76 medical college students in Madras, of whom 15 were women, of ages varying from 18 years to 25 years.

The subjects were brought to the Laboratory by car under basal conditions, i.e., 14 to 18 hours after the last meal and without breakfast in the morning or were kept at a convenient place overnight with an early evening meal. The basal metabolism was measured in the morning before breakfast after 30 to 45 minutes' complete rest. The determinations were made on each case on two different days. The apparatus used was the latest model of Benedict-Roth, with rubber flutter valves and the Collin's Kymograph attachment.

The body surface was computed from the charts devised by Aub and Du Bois based on height-weight formula.

About 230 basal metabolism determinations were made in all. As advocated by Du Bois, Macleod, Rose and Paul Roth, only the minimal basal rates were taken into consideration and compared with the standards of Du Bois, Harris-Benedict,



Dreyer and Krogh. The results are summarized according to ages in Tables I and II.

In men, the basal metabolic rate calculated for age 18 was found to be much higher than the average for ages 19 to 25, but being based on determinations on only four subjects the figure is not considered to represent the true rate for 18 years, though it is an indication of the high level of metabolism at that age.

For ages 19 to 25 the average basal metabolic rate is found to be 34.8 C. per sq. m. per hour and may be considered fairly well established. Judging from the results, the probable values applicable to South India for ages 18 to 25 are laid down as follows: 37.0 C. for age 18, 36.0 for 19, 35.5 for 20, 35.0 for 21, 34.5 for ages 22 and 23, and 34.0 for 24 and 25.

The average 35.0 C. deviates —14 per cent from Du Bois, —10.8 per cent from Harris-Benedict, —11.9 per cent from Dreyer and —8.1 per cent from Krogh's standards. The basal metabolism results range from —25.6 per cent to 2.8 per cent (Du-Bois), from —24.1 to 2.1 per cent (Harris-Benedict), and from —26.5 per cent to 3.8 per cent (Dreyer). The maximum individual variation from the average basal metabolic rate is found to be 16.6 per cent or —15.5 per cent.

In women (19 to 24 years of age) the predicted values are laid down as 32.0 C. for age 19, 31.5 C. for ages 20 and 21, 31.0 C. for 22 and 23 and 30.5 C. for 24 and 25 which gives an average of 31.0 C. per sq. m. per hour, same as the figures actually calculated from the results. This average shows a difference of 10 per cent from the rate for men, and deviates —16 per cent from Du Bois, —18 per cent from Harris-Benedict, —17 per cent from Dreyer, and —12.5 per cent from Krogh's standards.

The level of basal metabolism in South India and the variations according to age, weight and body surface as compared with the Du Bois, and Krogh's standards are represented

graphically in Charts 1 to 4. No correlation between pulse rate and metabolism was found.

The factors which account for the lowering of basal metabolism in South India by 12 per cent in men and 16 per cent in women as compared with the Du Bois' standards are discussed. The findings of August Krogh and E. F. Du Bois are quoted to show that the Aub-Du Bois' rates are 6 per cent too high even for Westerners. The findings of other workers on metabolism like Ozario de Almeida in Brazil, Takahira in Japan, etc., are quoted to show that lowering of metabolism cannot be due to any racial difference. The view is put forward that the lowering is due to the ready muscular relaxation in the hot tropical climate of Madras and to the low protein diet in South India, where the average diet of a vegetarian or a non-vegetarian is deficient in protein and fat, the staple food being rice. The so-called non-vegetarians in South India, with a few exceptions, take very little meat.

The basal metabolism of a few cases on a high protein diet, selected from the series investigated, is compared with that of a few others on a low protein diet (Tables III and IV). The average basal metabolic rate in the former is found to be 40.0 C. and in the latter only 31.9 C. per sq. m. per hour.

To show the effects of exercise on basal metabolism a few subjects known to indulge daily in exercise were selected and their basal metabolism rates are shown in Table V. The average basal metabolic rate is found to be distinctly lower than the calculated or predicted average for the mixed group.

In women the low metabolism is again attributed to the more marked muscular relaxation and the low protein diet obtainable here. The influence of the menstrual cycle on basal metabolism is commented on, and the rates in relation to the menstrual cycle are shown in Table VI. A rise in basal metabolism is noted in the pre-menstrual period and in the second week after menstruation. At other periods of the cycle there is a decline.

On the Reliability of the Ureastibamine Test in the Diagnosis of Kala-azar.

BY DR. J. CHRISTODOSS DAVID, PH.D., M.B.E.S.

Chopra, Gupta and David (1927) in a preliminary note on the action of antimony compounds on the blood pointed out that precipitation, produced when solutions of certain organic compounds of antimony were brought in contact with the serum of kala-azar patients, was of a specific nature and that it could be used as a diagnostic test for kala-azar. Since the publication of the above mentioned paper, an abundant literature has grown round this test, both in this country and elsewhere. In the foreign press, the test has received notice both in the Italian and French medical press. Florentino (1930) published a paper on the importance of serological reaction made with Stibosan in infantile internal Leishmaniasis. Labernadi (1931) considered the Chopra-Gupta reaction a simple and easy method for serological diagnosis.

Chopra and Chaudhury (1928) worked out the changes in kala-azar serum which gave rise to this precipitation with antimony compounds. In their words, "The precipitate formed by the interaction of the serum and ureastibamine was colloidal in character and consisted mainly of euglobulin, possibly contaminated with traces of albumin and pseudo-globulin. Moreover the precipitation of euglobulin, by any reagent will be maximum at its iso-electric point, *i.e.*, at a pH of 5.5. Since the iso-electric point of euglobulin in kala-azar does not differ from that of the euglobulin in normal serum, it follows that euglobulin from kala-azar serum will be precipitated most at a pH of 5.5. Consequently

when we mix serum and a solution of ureastibamine (4 per cent), the final pH of the mixture, in addition to the concentration of euglobulin and buffer action of the serum, will control the formation of any precipitation. The nearer the final pH is to 5.5, the greater will be the precipitation. The pH of a 4 per cent solution of ureastibamine is 5.2 and therefore at the interface, the pH will be near about 5.5, the buffer action of kala-azar serum being very weak as compared to normal serum. The concentration of euglobulin is also high. All these factors contribute towards this characteristic reaction of kala-azar serum. By dilution of the serum this reaction will be more unequivocal, as by dilution with water the pH of the serum is lowered, the concentration of euglobulin still remaining high enough to be precipitated by a strong dilution of ureastibamine."

The technique advocated by the original authors is as follows:—"The serum separated from the blood is pipetted out in a capillary tube and put into a Dreyer's tube a 4 per cent solution of ureastibamine is slowly added along the sides of the tube to form a layer on the top. With kala-azar serum a thick flocculent precipitate forms at once, while with the other sera there is either no precipitate whatever or only a slight precipitate at the junction of the two."

Chopra, Gupta and Basu (1927) applied this technique to 129 samples of sera. They found that of 70 kala-azar sera 100 per cent were positive, while with the aldehyde test only 60 or 85.6 per cent gave strongly positive reaction. Among the remaining ten, five were sera from patients with early kala-azar ranging from 3 weeks to 2 months in duration. The sera from these patients gave a strongly positive antimony test. Of 14 sera of malarial patients 13 were definitely negative, 1 gave a moderately positive antimony test and also gave a doubtful aldehyde reaction. More extensive trials showed that the doubtful reactions in kala-

azar cases and the positive reactions sometime occurring in non-kala-azar cases might be minimised by using 1 in 10 dilution of the serum.

Bose, Dastidar and Bagchi (1928) extended these observations and observed that of 58 sera from patients suffering from other diseases, 1 per cent solution of ureastibamine gave negative results in all dilutions, 2 per cent solutions gave similar results while with 4 per cent solutions with undiluted serum 4 cases were positive and 3 doubtful, in 1 in 5 dilution 5 were doubtful and with 1 in 10 serum all gave negative reaction.

In the light of these findings and the criticisms of Napier (1928), Chopra and De (1929) obtained fresh data using undiluted serum and serum diluted 1 in 10 and analysed their results. The findings were as follows:- Of 201 cases of kala-azar in which a diagnosis was made by the finding of *Leishmania* a positive reaction was obtained in 96.5 per cent of cases with the undiluted serum as compared with 83.5 per cent with the aldehyde test. With the diluted serum this percentage was reduced to 87 per cent. In a series of 139 non-kala-azar cases the test with undiluted serum was definitely negative in 64.1 per cent as compared with 77.7 per cent with aldehyde test. This high percentage of positives, the authors attribute to a greater sensitiveness of the test especially in endemic areas where latent and cured cases of kala-azar may co-exist. In a non-endemic area, like Peshawar where the test was done in 150 cases the negative reaction with undiluted serum was raised to 86.6 per cent. With the diluted method 89.9 per cent gave a negative reaction in the above mentioned series of 139 and in the non-endemic area the negative reaction was obtained in 98.7 per cent. In a series of 128 cases of kala-azar diagnosed by clinical symptoms, etc., the antimony test was positive in 99.2 per cent as compared to 80.4 per cent by aldehyde test. Taking kala-azar and non-kala-azar cases together in a series of 340 cases, correct

diagnoses could be obtained with the aldehyde test in 81.2 per cent of cases, with the undiluted antimony test in 83.2 per cent and with the dilution method in 88.2 per cent. This according to the authors brings out the advantage of doing the test both with the undiluted and diluted serum. With undiluted serum almost all the early and advanced kala-azar cases will give a positive reaction, but a few cases of chronic malaria, advanced tuberculosis, etc., may also come in. When a 1 in 10 dilution is used some of the very early cases of kala-azar may be negative, but the non kala-azar conditions will be excluded. If the test is done both with the undiluted and diluted sera a more or less certain diagnosis can be obtained in a very large majority of cases, especially if the results are interpreted with due regard to clinical condition of the patient.

Shortt and collaborators (1930) found a greater percentage of errors in the positive diagnosis of kala-azar cases by this test than in eliminating non-kala-azar cases. In negative results they found only an error of 2 per cent and so they opine that the test is of more value in excluding kala-azar than in revealing its presence.

Napier and Sen (1930) put the test to further proof, using various dilutions of ureastibamine and serum. They are of the opinion that the antimony test—like the aldehyde test—is in no way a specific one. It merely demonstrates the presence of some 'quality' in the serum which is present both in kala-azar and in certain other conditions, but which, however, is present to a greater degree in advanced kala-azar than in any other disease. The 'quality' makes its appearance soon after the onset of kala-azar and increases throughout the disease. The antimony test is designed to show the presence of this 'quality'. When strong serum is added to 4 per cent ureastibamine the slightest trace of this 'quality' will be demonstrated whereas when both the serum and the antimony compound are diluted a point is reached

when the presence of this 'quality' is only demonstrated if it is present is a very marked degree, such a degree as is only associated with kala-azar. It is these dilutions of the serum antimony compound which are the important ones from a diagnostic point of view, as they are the critical dilutions which separate definite cases of kala-azar from doubtful ones. Beyond this point the test can be used only for supplying contributory evidence although this evidence may be extremely valuable. These authors found that the most satisfactory results were obtained by the addition of 25 per cent serum to either 4 per cent, 2 per cent, 1 per cent or 0.5 per cent of ureastibamine. By adding this strength of serum to 1 per cent ureastibamine they obtained only 7 per cent incorrect result. 58 per cent were correct and 35 per cent gave a doubtful reaction. About the same mixture of antimony compound and serum can be obtained by adding 2 drops of serum (0.125 c.c.) to 1 c.c. of 0.5 per cent ureastibamine, this being a more practical method. (When 0.5 c.c. of 25 per cent serum and 0.5 c.c. of 1 per cent ureastibamine are added together the resulting dilution is 1 in 8 and 0.5 respectively. By adding 0.125 c.c. of serum to 1 c.c. of 0.5 per cent ureastibamine the dilution becomes 1 in 9 and 0.44 per cent respectively.)

Conclusions.

1. The ureastibamine test is not an absolute test. But because a laboratory test does not give cent per cent. positive results it does not follow that it has no diagnostic value. None of the laboratory tests can claim to give absolutely positive reactions in all cases. They should be merely considered as a guide to the clinician, who should read and judge their value after full consideration of the clinical signs and symptoms of the patients.

2. The best and most practicable technique is that of Napier described in the concluding portion of the preceding

section. Adding 0.125 c.c. of serum (or two drops) to 1 c.c. of 0.5 per cent ureastibamine gives a 1 in 9 dilution of the serum. The result, precipitation or the complete blurring of the laboratory window outline when the tube is held against the light is then read.

3. By means of this test a diagnosis can be made in the majority of cases of kala-azar.

4. The test is even more sensitive in excluding non-kala-azar cases.

5. The test is said to be somewhat more sensitive than the aldehyde test and appears earlier in the course of the disease.

6. The test can be performed and read in 15 minutes.

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Josef Skoda *

(1805-1881)

More than half a century was required for the popularization of the method of diagnosis by percussion invented by the Austrian Auenbrugger in 1761 and revived by Napoleon's chief physician, Corvisart, in 1808. The method of diagnosis by auscultation, first presented by Laennec, a Frenchman, in reports before the Academy of Sciences in 1818, was recognized a little more promptly. Both methods, however, were distrusted for the reasons that primarily, the methods were understood only by the inventors and secondly, men of the old school were reluctant to accept new-fangled ideas. Through the efforts and meticulous observations of Josef Skoda both methods were rationalized and perfected so that they were no longer arts but could be learned and taught in much the same manner as mathematics or law.

Josef Skoda, the middle son of a poor family, was born in Pilsen, Austria, December 5, 1805. His father was a locksmith who found difficulty in supporting his household and educating his children. It was, then, by sheer pluck that the children derived higher education. The eldest, Franz, became a physician, won a place of distinction in Bohemia, and contributed extensively to the literature of public sanitation and veterinary inspection in Austria. The youngest son followed his father's trade and eventually established a lucrative business in Pilsen. Josef, the middle son, was inspired by the pursuits of the elder brother, Franz, for whom he had great affection, and decided to be a physician also. He attended the usual classes at the Gymnasium at Pilsen and managed to work in two extra courses in philosophy. Further instruction became a serious problem until a friend offered aid and thus enabled Josef to

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JOSEF SKODA

(1805-1881)

of the heart valves and the relation of defects to disease processes is classic. In 1839 he published, again in the Year Book of the Academy, "A Minute and Practical Description of the Method of Investigating the State of the Heart." One of the important advances which he offered here was the identification of the various sounds of the heart. He distinguished between sounds and murmurs ("Tone" and "Gerausche") of various sorts in such a way that the vagueness which cloaked the work of the inventors was entirely dispelled and the subject became intelligible to any and all who favoured the methods. In November, 1839, Skoda was invited to address the Royal Society of Physicians in Vienna on the subject of "Diagnosis of Heart Valve Failure" which turned out to be such a success that the principles are still in use in the teaching of the method. At this period Skoda extended the process of percussion to diseases of the abdomen and in collaboration with Emil Dobler, a colleague, reported on abdominal typhus ("Abdominal Typhus and Its Treatment with Alumen Crudum," 1837). He especially emphasized that the disease changes of typhus must be observed in all organs, from the beginning to end of the disease process. Specific descriptions of the sort of functional disturbances the organic changes exhibit during life established his reputation in this field of work.

At the close of this period of service as assistant Skoda accepted a post of Physician to the Poor at St. Ulrich, near Vienna, where he practised and in free hours continued to perfect and clarify the methods of percussion and auscultation. Each new publication on the subject brought forth criticisms from older physicians who were still averse to the methods, but Skoda's friends gave him strong support at every opportunity. After nine months activity of Physician to the Poor he was called by his friend, von Turkheim, to establish a division for the diagnosis and therapy of diseases of the chest in the General Hospital in Vienna and thereupon received the title of Ordinary Physician, a commission which marked the turn for better in

Josef Skoda

his life. Thenceforth he suffered less from financial embarrassment and gained recognition in circles which were instrumental in according him due honour. In 1847 he was appointed by Kaiser Ferdinand member of the Royal Academy of Science in Vienna, where his lectures became famous and were well attended by students of many lands, who found not only a wealth of knowledge springing from the frail dark person of Skoda but also lasting and impelling inspiration. It was Skoda who boldly championed the unhappy Semmelweis here in the contest against puerperal fever.

For about two decades he continued to add to the knowledge of percussion and auscultation and the diseases to which these methods of diagnosis might be applied. He was a frequent and much desired lecturer at the Royal Academy, and contributed not only on his favoured subjects, the heart and lungs, but also on subject of current interest, such as catalepsy, cholera, tuberculosis, diseases of the stomach, etc. His method of treating inflammation of the lungs with turpentine vapour inhalations is still in practice.

These activities were gradually decreased, however, owing to ill health. From his youth Skoda had never been very strong. At one time he suffered an attack of typhus which left him considerably weakened. At another stage he was forced to drop all activities to depart for a rest cure for tuberculosis. Strangely enough, the organ concerning which he assembled the greatest amount of knowledge and found so deeply interesting, the heart, was that which was weak in his own physique. Poor eyesight forced him to wear glasses continuously and during his later years he became almost blind, unable to read or write. He retired from the staff of the hospital in 1871, and became Professor Emeritus. Ten years later he succumbed to an organic heart complaint, and though he had not been active professionally for many years, he was universally mourned. It is satisfying to know that the efforts of one handicapped not only by lack of means but also by poor

rewarded, and that not only were honours heaped upon him in life, but also after death. He was so loved and remembered that a street in Vienna was named in his memory, Skodagasse.

Some of the important contributions to medical literature made by Skoda already have been mentioned. Others are: "Heart Beat and the Sounds Caused by Heart Movement" (1837); "The Use of Percussion in Investigation of the Organs of the Abdomen," (1837); "Critique of the Diagnostic and Semiotic of P. A. Piorry," (1837, 1838, 1840); "Concerning Pericarditis," (with Kolletschka, 1839). In this same year he published his monumental work on percussion and auscultation. A new type of treatment, puncture of the thorax, had been introduced in Germany and in 1840 Skoda addressed the Society of Physicians in Vienna on the subject "Concerning Puncture of the Thorax Conducted on 40 Patients in the General Hospital," and proved conclusively the success of the method. The early work which Skoda had done on cholera was reported in 1854 in an article entitled "Pathology and Therapy of Epidemic Cholera." While at the head of the Division for Diagnosis and Therapy of Diseases of the Chest Skoda contributed voluminously to the literature of the heart and lungs. Some of the important papers are given here: "Temporary Valvular Insufficiency" (1863), "Double Pulse and Double Heart Sounds (same year), "Observations on Hypertrophy of the Heart," "Observations on Tumour of the Mediastinum" and "The Condition of Hemoptysis in Pulmonary Tuberculosis" (all 1870). At this epoch Skoda gave several clinical talks on diseases of the stomach, and in 1871 he published in the Vienna General Medical Journal an article on "Perforated Gastric Ulcer." An article on "Constipation in Pneumonia" was one of his last literary efforts (1873).

In addition to these specific contributions to scientific literature Skoda published several general papers such as "A Brief Report on the Existence of Cretinism in Austria" (1861), and "Opinions on Medical Study," 1849.

A Case of Adherent Pericardium

WITH

Rheumatic affection of the Aortic and Mitral Valves.

BY MISS M. MAMMEN, FIFTH YEAR.

Mr. X. 38 years old. Ryot by occupation admitted to General Hospital for Hernia under the 3rd Surgeon, was transferred to medical side for opinion, due to certain heart lesion.

Patient was having pain in chest and breathlessness. Duration—20 years.

History of present illness is that the pain and breathlessness came on insiduously. Now and then he used to get oedema of legs for which he took medicines which gave him relief.

Previous history—About twenty years back, he remembers to have had attacks of fever with severe pain and swellings of joints. One joint after another was affected.

Physical examination—Patient not well nourished, but not anaemic, man of about 40 years of age. Tongue clean, teeth dirty, pyorrhoea alveolaris present, liver and spleen not palpable, no oedema.

Circulatory system.—Patient just a little cyanosed.

Apex beat.—A forcible pulsation visible in the 5th intercostal space just internal to the nipple line. No visible pulsation in the neck or in the epigastrium.

Pulse—Slow heaving rise, and well sustained summit. No water hammer pulse. All the characteristics of the apex beat are represented in the pulse.

Palpation Mitral area.—A heaving impulse in the 5th space $\frac{1}{2}$ inch internal to midclavicular line. Its position is very little altered by the different postures of the patient showing a more or less immobile heart. A to and fro thrill with an after-systolic retraction also palpable at the apex.

Aortic area.—A systolic thrill which is also felt in the supra-sternal notch.

Percussion.—Boundaries of heart.

Upper border—3rd Rib.

Left— $\frac{3}{4}$ inch

Outside midclavicular line.

Right—Just external to right sternal border.

Dullness over the lower 3rd of sternum made out.

Auscultation Mitral area.—Loud 1st sound short and sharp, best heard in the 5th space $\frac{1}{2}$ of an inch internal to midclavicular line, 2nd sound faint and sharp.

A murmur occupying the whole of the diastolic period—soft at 1st part rough towards the end; ending in the 1st sound best heard in the position of the apex beat, and has no conduction in any direction.

Aortic area.—A systolic murmur in the right 2nd space $\frac{1}{2}$ an inch external to right sternal border, Rough in character: conducted along the carotids.

A diastolic murmur conducted to the left and downwards, best heard in the 3rd left intercostal space near the sternal border.

Pulmonary area.—Loud 1st sound. Weak 2nd sound. A diastolic murmur heard here also.

Tricuspid area.—nil abnormal. A few extra systoles could be made out.

Respiratory system.—Both hila, dull bronchial breathing heard at hila. Rales over the bases.

Summary of Physical findings.—

1. A heaving apex beat.
2. Fixity of the impulse and its border well within the left border of dullness.
3. Cardiac dullness increased both to the right and to the left.

4. Post systolic retraction (visible) of the intercostal spaces at the region of the apex. A to and fro thrill without exact synchronism with heart sounds.

5. Loud 1st sound, mitral area feeble 2nd sound.

Diastolic crescendo murmur ending in the 1st sound without any conduction.

Aortic area.—Systolic thrill and murmur conducted along carotids.

Diastolic.—Murmur conducted downwards and to the left, best heard in the 3rd left inter space. Diminishing in type.

Blood and Urine.—nil abnormal.

Electro-Cardiogram.—9th. Simple Bradycardia Low voltage—Lead I T + + +.

10th S. A. (Sinus arrhythmia)

N. P. C. Nodal premature contraction.

P—ve in certain places.

Wassermann Reaction.—Negative.

X-Ray of Chest.—Cardiac area enlarged to the left and slight infiltration of the lungs at the hila.

Blood Pressure.—Systolic 136.

Diastolic 80.

Ophthalmoscopic Examination.—nil abnormal.

Positive Findings:—

- (1) History of Rheumatic fever 20 years ago.
- (2) Right ventricular hypertrophy. Left ventricular dilatation and hypertrophy.
- (3) Forcible apex beat. Fixity of heart (not mobile).
- (4) Post systolic retraction of the intercostal spaces in the mitral area.
- (5) A to and fro thrill at the apex and a systolic thrill at aortic area.

(6) A prolonged diastolic murmur at the mitral area too good to be caused by mitral stenosis alone.

A systolic murmur at aortic area conducted along carotids. A diastolic murmur at aortic area conducted along the left border of the sternum.

Discussion :—

A very forcible apex beat but heart is not much displaced downwards or outwards and is more or less fixed in the 8th space. The impulse is well within the border of the area of dullness (one inch within). A poor systolic retraction of the spaces and the prolonged diastolic murmur with the fixed apex suggest an adherent pericardium.

Secondly. The presystolic thrill and murmur at the mitral area with right ventricular hypertrophy and cyanosis suggest mitral stenosis.

Then the systolic and diastolic murmurs at the aortic area with left ventricular hypertrophy and dilatation the murmurs having the typical conduction and characteristics suggest a double aortic lesion : stenosis with regurgitation. The typical water hammer pulse and the murmur in the femoral artery, Duroziez murmur are however absent, due to the multiple intercurrent cardiac lesions and the adherent pericardium.

The long crescendo diastolic and presystolic murmur at the mitral area, ending in the 1st sound is too good to be caused by mitral stenosis alone while it can be explained by the additional adherent pericardium which is also responsible for the fixity of apex beat.

So a diagnosis of aortic stenosis with regurgitation, a mitral stenosis, and an adherent pericardium was made. All the three lesions having been caused by the Rheumatic fever from which the patient suffered 20 years ago.

I wish to express my deep sense of gratitude to Rao Bahadur Captain P. Krishnaswami, M.B. & C.M., M.R.C.P., for his kindly help and for allowing me to report this case.

The Hygiene of the Mind.

'Man is made with such large discourse looking before and after.'

SHAKESPEARE.

To write in the course of these few lines exhaustively on so fast a subject as this, would well nigh rank itself as an impossibility, hence this essay will endeavour to present just one aspect of it, namely, its necessity, as an antidote and perhaps the only one against a disease whose menace to mankind is growing fiercer everyday one that pays no heed to age sex, clime or country, a misfortune that has come to the lot of every man and woman on earth since Adam—the centre and vortex of many a disease, something tangible whose symptoms are felt and seen, yet which thrives more on mind than on body and one that has caused greater havoc to humanity than any other disease—yet recognized as a disease by very few even among the fraternity of professional healers. Proof positive of this lies in the fact that this disease goes by no larger a name than 'Worry.' Had psychologists and pathologists recognized its true significance it would have ere this assumed a size of much huger proportions. Nevertheless it is a disease whose victims may not however be filling our General Hospitals which unfortunately go only halfway in the alleviation of human suffering, but they do fill our jails and penitentiaries, our State Prisons and our Asylums. It is a disease that surely enables Death to exact a greater toll on human life than any other and unique in this respect that alone of all human disease there is no analogy to it whatever in the lower animals.

Just as "Man alone of all animals is moved and shaken with that mad fit called laughter", he alone of all is prone to fret and fear and thus victimises himself to disease and worry. What great havoc has been wrought by worry both in the past and in the present is not difficult to ascertain how it has raised insignificant little bodily ills to heights beyond human cure, how it has been the cause determining the fatal issue of illness which would otherwise have been recovered from, how it has been a consumer of great energy causing untold agonies, mental and physical pains, and lastly how under its influence men and women have lost their mental buoyancy and equilibrium and have been forced to crime,

murder, suicide and death may be seen in the history of every nation under the sun. Under its loathful spell bright eyes lose their vital glamour, healthy cheeks grow pale, the 'grief muscles' of Darwin are forced into tonus, and a predisposition to diseases of times more terrible than itself is brought about. Children born of parents with worried minds are naturally predisposed to irritation, distemper and low vitality. Degestive disorders melancholia, hysteria, hallucinations, insanity, brain-fag, insomnia, consumption these are but a few of the vicious cycle whose centre and vertex is worry—a cycle which the combined efforts of every physician in the world cannot prevent or cure.

Every human being craves for happiness, 'tis in fact the end and aim of life and nothing is more absolutely the negation of happiness than worry. The happy man smiles away his troubles like quiet grazing cows do with crows that some times hop on them for an easy meal. He works well during the livelong day, lives, sleeps and eats well too and of the latter process his greatest knowledge amount to this, that at certain intervals during the day he deposited certain pleasant materials into the largest aperture of his face, but of their subsequent history he has no record whatever. As for his tongue, he does not remember having seen it. But as evolution advances as man becomes more civilised and more thoughtful, has he comes to live less in the present, more in the past and yet more in the future as his nervous mechanism undergoes a higher organisation, becomes more delicate and susceptible, in a word as man becomes more self-conscious and therefore more human, so he becomes more liable to the disease which has been rightly called the Disease of the Age.

A man or woman that falls a prey to worry is as much entitled to our sympathy as if he or she had a Cerebral tumour as big as your fist, but the greatest effort that sympathy can make in that direction often prove futile and vain. A worried man is loathsome and dangerous to himself and to others. He becomes irritable and lacks perseverance, forbearance and social efficiency. He is prone to hasty decision followed by faulty action. His senses become hypersensitive. He becomes the reverse of an affectionate father and a considerate husband. He can't stick the once musical and familiar noise of a family circle. His noisy little boy at home may receive a blow when he expected a smile, and his drum may come to an untimely end. He consequently loses love, reverence and sympathy from both kin and kind.

Worry has thus caused estrangement between parent and children, has broken happy homes and has sown seeds of darkest discord to the four winds of the earth.

The emotions play an all important part in life and when a man begins to lose them by continual worry and habitual fretting, and fearing, he has well nigh reached the danger zone and four to one he becomes a man lost. He has no feeling, no hate, no love, no fear, no apprehension, no jealousy not even the desire to live.

Danger does not effect him the cry of fire does not cause him to stir a finger he will remain motionless even whilst his own child may be drowning before his eyes. Even ambition 'the last infirmity of noble minds' stirs him not at all. He has enlisted himself to the clan of the Living Dead.

And the verdict of insanity is passed on such a one. Irremediable self-inflicted ruin total and complete !

Worry has thus definitely raised the disease rate and surely the death rate. It makes a man or woman not only look older but actually makes them older.

The whole facial expression no less than the body from hair-tip to toe nail all undergo a change for the worse, an illustration of the fact that mental state and bodily states are inseparable though not identical.

If disease may be defined as a departure from the normal working of the live processes of an organism, with the mass of evidence given above and much more which could be given if space and occasion would permit, none can deny this appellation to worry. Every access of civilisation increases the importance of this malady. Printing must have multiplied it a hundredfold. Cities with their feverish competition and foul air have made its symptoms more acute and horrid. Brain work alone has killed none, brain work plus foul air has killed many, but brain work plus foul air plus worry has caused the untimely deaths of millions. Pre-eminently worry is a Disease of the Age as it effects especially the kind of men and women the age is producing. Particularly those men to whom the struggle for existence is a fierce and strenuous battle, those who have the burdens of other to shoulder over and above those which naturally fall to them in the

economy of life, those the forties and gray hair and beyond all these 'the dread of something after death', particularly these have been chosen to be the victims of worry. Its psychological grounds have made it almost a necessary adjunct to life. It is well to be sustorenu to strive and agonise, to think of the morrow for to renounce the struggle for existence in not to live but to vegetate, but the heavy price must be paid. Nothing so damps the spirit of an ambitious energetic lad striving hard to win his spurs in the game of life as failure.

Distress which brings with it mental unrest inevitably follow and the unfortunate one becomes a marked victim to worry. Disappointment, calamity, defeat, the consciousness of impotence all these lend a helping hand to worry.

To some a regretful past, an unfavourable present, or an unpromising future may bring in the dreadful scourge of worry. To others lack of sympathy at the hands of loved ones may be a sufficient plea for worry. An active mind with nothing to do is easily apt to worry since.

Absence of occupation is not rest.

A mind that's vacant is a mind distressed. These are but a few of the predisposing conditions to worry. No chemical drug, not alcohol or morphia, not any one of the host of sedatives and stimulants both true and false, no electric massage, nay not the wisest prescription or formula could warrant sure relief to a victim of worry. We have to turn from matter to mind itself to find an antidote to fight against the ills of the mind. Hence music, poetry, reading, gardening and such pleasurable as well as divertive hobbies help a great deal to ward off the vicious effects of worry; and above all a same common sense is the most potent spell that can save mankind from falling hapless prey to the Disease of the Age! In fact if man paid as much heed to the Hygiene of his mind as to his body, much of the miseries and evils that are the baneful parasites sapping out life's vital force would have been conquered as easily as the other ills that affect humanity.

By "GLARE"

Transitions of a Medical Student:

BY H. SUMITRA RAO, FINAL YEAR.

"All the world's a stage :
And all the men and women merely players
They have their exits and entrances
And one man in his time plays many parts
His acts being seven ages :—"

so says Shakespeare.

We believe, no other Educational career affords us a subject so fruitful of speculations, so pictorial an imagination, so interesting a narration, so picturesque a retrospection, so lively a discussion and so dramatic a description as that of the Medical career. We also believe no other course is so well suited to inculcate to posterity a sense of Spartan simplicity, Marathan hardihood, Stoic indifference and Platonic ideals as that of the Medical course. Events have marched in flashlight succession during the course of a few years of our Medical career—a career so singularly chequered with good and evil, with glory and obloquy. The fame of those who subdued Antiochus and Tigranes grows dim before the exploits of the young Medical adventurer: the historic descents of Mahomed Ghazni and Nadir Shaha upon the plains of Hindustan, pale away into insignificance before the spectacular conquests of the Medical students before the gates of the Madras University: the statesmanship of Scipio and the generalship of Napoleon are eclipsed before the patience and perseverance of our Medical enthusiast.

The passing of the Intermediate Examination of Arts marks in the career of the student an epoch-making period. The future lies at his feet. He falls into a state of vacillation whether he is to continue the Arts course and embrace Shakespeare for dear Shakespeare's sake or go about job-hunting all the while moaning like Milton 'On His Blindness' and yet harping upon the consolation, 'They also serve who only stand and wait,' or chalk out entirely a new line by suddenly shooting off at a tangent into one of those professional colleges scattered far and wide in the Presidency as that of the Medical, Engineering and Agricultural

Colleges and turn out to be the saviours of humanity, constructors of bridges or cultivators of lands.

After a series of gyrations the novice finds himself into the Portals of the Medical College—those red buildings, a colour proverbially acknowledged as a danger-signal for any ship drawing within its port. With the relaxation of a reign of aristocracy or a down right autocracy, for which our College was once abnormally proud,—the flaring red colour has also towed down to a sombre white heralding better times, better security, better examiners and better results.

There is nothing particularly entertaining in the first year, excepting the perennial thralldom and the boredom of the book, the bench and the pedagogue. But, one striking feature is the campaign against frogs and cockroaches. We are told in one of the fables, that the frogs wanted a king and Jupiter gave them a log of wood. They dandled with it, with impunity, and not satisfied with their monarch, they invoked Jupiter once again for a new king. Jupiter in his wrath sent down a crane-king which began eating up the frogs, to their great consternation. Even so we believe, with the fresh appointment of a whole-time Lecturer in Biology, the frogs got a crane king (to do the Biology Lecturer sufficient justice, he is not lean and lanky) and the crusade against frogs is intensified to the detriment of the frog-population. The Greater and the Lesser Gods of the Biology Department move within their own orbits and all their migrations are from the blue-bed to the brown.

The next scene shifts into the Anatomy Department—the 'Hall of the Dead'—where all the fine arts of cutting and chiselling are taught to the students every morning. There, Pluto King of Hades, reigns supreme within its four walls and there you see

'Mortality dead and strewn,
Some mute inglorious Grays here may rest
Some starlings quiltless of their
Country's blood.'

Every morning wakes the student to a repetition of toil, bidding him forth to duty—for :—

'Awake, for Morning in the Bowl of Night
Has flung the Stone that puts the Stars to flight.

And Lo! the Hunter of the East
Has caught the Anatomy Theatre in a noose of light,
And sure, it is time for thee to rise and dress,
For soon dissection time will heave in sight.'

In days gone by, Pluto held his grim reign there and it was veritably a reign of Terror—of Terror heightened by mystery. There seemed to be a universal panic-stricken cry, while students struggled for Liberty, Equality and Fraternity. With the retirement of that peeksniffian Potentate more beneficent times have succeeded: the Reign of Terror has yielded place to a Reign of Saturnalia—the Larzean pangs are quenched, the Damocles sword is removed, the Punch and Judy shows are pushed forever—a bumper harvest of students are passing out of its gates, and better times, better security, and better treatment is assured upon those entering within the portals of that Department.

The scene is changed and it is the third year. An year of relaxation for boys and girls who skip about in the General Hospital with stethoscopes in their hands. It is an year of calm after a storm and perhaps also an year of calm before another storm of future years—who knows, who knows!!

With the dawning of the fourth year begin once more the toils and trials of study, reinforced with the trials of knocking about from one Hospital to another and from one place to another, like the poor Israelites wandering from the Land of the Pharos. We study Hygiene in this year—that important branch of science which deals with the Preventive Aspect of Medicine and Prophylaxis. Our Hygiene Professor is particular to ram down our throats all the 'Vitamins' from 'A' to 'Z'—the whole gamut of the Alphabet—with a view to fortify us from all sickness and ailments and harden us against all strenuous exertions of the present and perhaps of the succeeding years also. Next again, prior to the dawn of scientific research, as early as Hippocrates, it was acknowledged that Ultra-Violet rays are beneficial to the human system and it is particularly relieving to find we get an overdose of the same by virtue of students running about from Hospital to Hospital in the hot midday sun. Congratulations to the authorities for this subtle manoeuvre and a beneficent return!!

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In the Final year, we go to the Mental Hospital and suffer from all Illusions, Delusions and Hallucinations! We settle ourselves once again for an arduous struggle—a struggle unparalleled either in History or Adventure. The historic conquests of Nelson over Napoleon, of Hannibal over the Romans, of Alexander over the Grecians grow dim before the spectacular conquests of the Final Year student over his Examiners. We are inclined to repeat to ourselves and better after an examination:—

“ There are more things in Heaven and Earth
Than is dreamt of in your philosophy.”

Last scene of all ‘ that ends this strange eventful history ’ is the poor House-Surgeon or the House-Physician,—a poor speck of a man waiting Micawber-like for something providential to turn up:—

“ A lean and slippered pantaloon
With spectacles on nose and a pouch on side
His youthful hose well saved
A world too-wide for his shrunk-shank
And his big manly voice turns again
Towards childish trebles pipes and whistles in his sound.
Sans prospects, sans appointment, sans earnings and sans money ”.

The Spirit of Man.

BY A. BABU RAO, III YEAR.

The enormous increase in the brain capacity has been the consequence of the higher intellectual developments, man grows to be curious, inquisitive, and desired to extract Nature's secrets from her bosom. He had been finding remedies for all the evils that stood before him. He had yearned to soar higher up than his physical mould, and find out what was beyond him. All these efforts had led to the concentration of the mind and thus to the formation of the abstract influence, that we call *Soul*.

The controversy on the *Soul* is one of the most difficult and obscure subject that the human mind approaches. An old view, associated with the doctrine of most religions, holds that “ man's soul is a special entity, a unique independent individuality, which dwells for a time only in the mortal frame, leaving it and living on as an immortal spirit after death.” A modification of this ascribes a true soul to man alone and refuses it to the animals. Some interesting views tell us “ that the immortal soul enters the soulless embryo on the fortieth day after conception in the case of the boy, and on the eightieth day in the case of the girl. There were some evolutionists, even, who believed that during the progress of the apes, the divine spirit was, at one time, breathed into the frame of the anthropoid thus converting it into an immortal soul.

Such views, as these are quite inconsistent with the smooth course of evolution. It is not unreasonable to consider that man's mental development is controlled by the same natural laws as those of his body, and that is, also, inseparably bound up with that of the rest of the mammals. It is claimed that an impartial comparison of the psychic processes in the higher and the lower animals proved that there were numerous transitions and gradations, and that a long series of intermediate stages connect the psychic life of the higher animals with that of man on the one side and that of the lower animals on the other.

Haeckel says, in a discussion on the subject, “ that the soul is not a special immaterial entity, but the sum-total of a number of

connected functions of the brain, "and that it comes to an end when the brain dies. According to him the human soul has reached its present height by a long period of gradual evolution; it differs in degree, and not in kind, from the soul of the higher mammals and thus it cannot in any case be immortal.

Spiritualists claim to be able to see and speak with dead people by clair voyance. They say that an individual has a definite post-mortem life comprising a series of stages, which are passed in the Astral world, Mental world, Spiritual world and so forth. The length of time taken for the soul to pass through these stages depends upon the degree of evolution of that particular soul, a highly evolved one being capable of rebirth immediately and a poorly evolved one taking a very long time to be reborn. It is asserted that during this period before the rebirth the soul recapitulates its past and plans out its future.

Hypnotism and Mesmerism give definite proof of the existence of an abstract part of man's life. These are branches of science, and act much in the way in which a magnet influences a magnetic substance. Indeed everyone is said to be capable of developing "animal magnetism" that is latent in him. Another curious phenomenon is "Mental telepathy." By this a person is able to transmit messages to another who is many thousands of miles away.

All these are wonderful; but confusing, too. No amount of literature could as yet enlighten us on this subject. Eminent men like H. G. Wells and others are indefinite about it. They state that in the visible biological world, in the world of fact, life never dies, but only the individuals that it throws up; so, too, there may be another side of existence of which our consciousnesses seem to be only the acutest expression we know—a perceptive side of matter—and which is more enduring than any individual experience. And, in bringing this to a close perhaps nothing better could be done than presenting an extract from Wells' "Science of life":—

Apart from such speculations we may say this much: upon the continuity of any individual consciousness after bodily cessation and disintegration "the science of life" has no word of assurance, and *on the other hand it assembles much that points towards its improbability.* But, so far as our lives go, as matters of fact, apart from

consciousness, "The science of life" has no doubts; it does not speculate, it states. Our lives do not begin afresh at birth, and do not end inconclusively; they take up a physical inheritance, they take over a tradition, they enter into a set drama, they are conditioned from the outset and each has a role to play, different from any role that has ever been played before or will ever be played again. And our lives do not end with death; they stream on, not merely in direct offspring, but more importantly perhaps in the influence they have had on the rest of life. According to the playing of the role, the unending consequences are determined. They endure in the fabric of things accomplished for ever. That at least is not speculation; it is as much a statement of fact as that every stream that flows upon this planet earth flows down towards the sea.

Editorial Notes and Comments.

We are always glad to record here the achievements of our old boys, We only wish that our old boys would take more interest in their *alma mater* and keep in touch with the College by writing to the magazine regarding their work, etc. We shall be only too glad to reserve a section of the magazine for letters from old boys on professional or other matters which will be of interest to our readers. This month we have to congratulate more than one of our old boys on their splendid achievements.

* * * *

Dr. K. V. Krishnan, who has just been appointed to the newly created chair of Malaria and Rural Hygiene in the All-India Institute of Hygiene, Calcutta, on a salary of Rs. 1,500-2,000, joined the Madras Medical College as a student in 1914 taking the M.B.B.S degree in 1919. He served for seven years in the King Institute of Preventive Medicine, Guindy. He was in charge of several mobile research units. In 1922 he was sent to Cannanore to investigate an epidemic of Bacillary dysentery. In 1924 and 1925 he went to Rameswaram island and to the town of Kayalpatam in Tinnevely district to investigate into the incidence of Kala-Azar in these places. While at this work he attracted the attention of Col. Christophers, I.M.S., who had just been appointed Chairman of the newly constituted Kala-Azar commission. The following year he was elected Rockefeller fellow and proceeded to Johns Hopkins University where he was awarded the Golden Key for the best fellow of the year. Then he went to London and took the diploma in Bacteriology. Later he passed the M. R. C. P. examination of Edinburgh. His research work in the Laboratories of the Royal College of Physicians of Edinburgh has been very favourably commented upon. On return to India he was appointed to the Kala-Azar commission and has now been selected to one of the professorial chairs in the All-India Institute of Hygiene.

Editorial Notes and Comments

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We heartily congratulate him on his success and on his bringing honours to his *alma mater* too. It was at one of the College functions that Surgeon-General Megaw stated that although the medical profession in India might look crowded, yet there was plenty of room at the top. Dr. Krishnan's career has justified this statement. May his achievement be an incentive to our students to reach similar heights.

* * * *

Dr. S. R. Pandit, B.A., M.B.B.S. B.S.Sc. (Madras), D.B. (Lond.), has been appointed to one of the research appointments in the All-India Institute of Hygiene, Calcutta. He was for some time assistant professor of Hygiene in this College and later proceeded to the King Institute. We congratulate him also on his well deserved appointment and wish him a career of further usefulness to our country.

* * * *

Dr. K. C. Kutty Ettan Raja, L.M.S., L.R.C.P. & S., D.T.M. & H., D.P.H., of the Madras Public health service has been appointed assistant Professor of Vital Statistics in the All-India Institute of Hygiene, Calcutta. He was engaged for some time in research in the London School of Tropical Medicine in certain aspects of the subject in which he has specialised. Every one who has come in contact with Dr. Raja has been impressed by his open hearted manner and loveable nature. For several years he was health officer of Ootacamund and was extremely popular there. Our best wishes go with him in his new sphere of work.

* * * *

We are glad to welcome back to Madras Dr. Kanakasabesan, M.S., L.R.C.P., L.R.F.P.S., F.R.C.S. (Edin.,) who has just returned from Europe after passing the F.R.C.S. exami-

nation of Edinburgh. It is but four months since he left these shores and his achievement is therefore very creditable.

* * * *

Lieut.-Col. W. C. Paton, I.M.S., on return from leave has taken charge of his former duties, as Superintendent, Women and Children Hospital and Professor of Midwifery.

* * * *

Lieut.-Col. R. E. Wright, I.M.S., on return from leave resumed his former appointment, and is now acting as Surgeon-General with the Government of Madras in addition to his duties.

* * * *

The Members of the U. T. C deserve our warm congratulations on their winning the Guard mounting Cup for this year. Detailed information will be found in another place of this issue.

* * * *

Lieut.-Col. G. Pandalai, I.M.S., has been unanimously re-elected as president of the Faculty of Medicine and Dr. M. R. Guruswami Mudaliar, B.A., M.D. & C.M., was returned to the Senate without contest. We heartily congratulate them both.

* * * *

With the posting of Dr. Kanakasabesan, M.S., F.R.C.S., to Royapuram, Dr. K. Rama Menon, F.R.C.S., reverts as Surgical Registrar, and lecturer in Othopaedics, Dr. N. S. Narasimhan, F.R.C.S., as assistant to Professor of Operative Surgery and Dr. Raghavachary to Government Royapuram Hospital as R. M. O.—his former appointment. Dr. R. K. Chettur, M.B.B.S., is posted on reserve duty at the Medical College, Madras.

A New Heart.

(A LAYMAN'S PHANTASY.)

"New Hearts for old! Loving hearts for withered!" Those were the bold words that stared me in the face. I didn't know that the science of surgery had soared to such a dizzy height. And as I looked, an idea—an inspiration—was born in my mind. I shall explain.

A few months back, I had met and fallen desperately in love with a beautiful girl named Leela. Unfortunately for me, she had what is generally called a hard heart. And moreover, she knew as much as I did about the anatomy of that interesting organ, so that I could not bluff her with the "broken heart" idea. We had a straight forward talk about it one evening, and she told me plainly that she did not believe in Love. I pleaded with her, but it was no use, though with her wonted charm and commonsense, she agreed that we could yet continue to be good friends.

Need I tell you that when a fellow falls in love, mere friendship does not satisfy? It only aggravates the malady. At least, that was the case with me. But I didn't care to take the risk of proposing to her a second time, and thus my position was becoming more and more unbearable every day. It was at this time that I received a communication from Dr. Murugesu, the famous surgeon, in which he put forward his wonderful claim, and invited me to call upon him any time I chose, and investigate the matter for myself.

The doctor's laboratory was an interesting sight. But the most striking things there was a table on which about a dozen glass jars had been neatly arranged. Each jar contained a heart, and it was almost funny to see the way these were working, with a rhythm which I knew was perfectly normal. It surprised me.

He did not explain how he had managed to collect these hearts, and I did not press him. His theory was that the qualities of the heart were determined by certain variable characteristics that are evident to

trained eye. He said that he had carried out the "subscription operation" in dozens of animals, and with invariable success. But he had not yet tried it in a human being. I told him that he was sadly mistaken if he thought that I wanted to have a new heart. He smiled, and said that he was not thinking of me at all. But what about Leela? He knew all about the state of affairs between us. As a matter of fact, he had been watching us kneely. And now the time was opportune; for he knew, as well as I did, that Leela was suffering from appendicitis. "I can carry out both operations at the same time, and no one shall be the wiser." I do not wish to offer any defence for my conduct. I said I was willing. You see, ever since I received that letter of his, the same thought had been present in my mind. I instructed him to use the softest heart that he could yet hold of.

The rest of the narrative can be put into a few words. The operation was carried out, and the doctor assured me that it was a great success. On the strength of that assurance, I proposed to Leela once again, but alas for my hopes! she had already fallen in love with Dr. Murugesh. I hadn't the ghost of a chance.

I should love to give you the address of Dr. Murugesh. But on waking up, I find that I cannot recollect it.

Thoughts on Recent Events.

BY L. V. VARADARAJ, I.M.B.

The world as it is not without being enriched day by day by a rapid succession of events throughout its unlimited extent, the forced retirement of his lecturer and the untimely demise of his classmate are matters of more import and intense grief to a student, at least to me, than the death-day of empires.

DR. MATTHEWS.

It was but a few days ago that the loving students of Dr. Matthews met on the open lawn within the precincts of their *Alma Mater* to take farewell of their late lecturer on the occasion of his ceasing to serve the College any further.

That the deficiency in the purple coffers should terminate in the unfortunate ex-service of this Doctor is an event that will ill brook to be passed by unwept.

More than one sheep that had felt his tender care vied, but yesterday, in bleating their appreciation of their fond herdsman. Yet would it leave no small void in my heart if through the medium of this, our College Magazine, his name amidst his high merits should be left unwritten. Nor is there many a name more worthy to be recorded in the columns of our distinguished periodical than that of Dr. Matthews.

It is a rare bit of fortune that attends any individual in this naughty world to come across one who has in him the very milk of human kindness. And Dr. Matthews is such—the very soul of kindness not unattended with unpretending simplicity. Nay more, his claims to our love and admiration as one of the most good-natured men on earth are not the less to that as one of the ablest of anatomists.

For almost a decade have students enjoyed his silver spell while he shed his benignant light along with the other starry constellations that still grace the vaulted canopy of the dissection hall in exalted eminence under the sovereignty of the moon of Dr. KOSHY.

It had been the unique privilege of myself and not a small number of others to have been led forth into the green pasture-lands of Anatomy watered by the limpid streams of practical dissection and fed with the emerald sweets of Osteology that was administered with parental solicitude by the most faithful of stewards who was none other than Dr. Matthews. He it was the magician that laid bare the secret treasures of the sub-terranean caves beneath the skin of man to the wonder and amazement of myself and other brother Aladdins.

The retrospect of the life of our late lecturer in the College, while swarming with varied activities, cannot help recollecting to us the sacred hours that found him engaging his head and hands in his disinterested work in the building up of the Anatomy Museum. While this, his work, is the best testimonial of the invaluable qualities of his head and heart, it is also of lasting benefit and a perennial source of knowledge to those who thirst after the pierian spring of human anatomy.

So kind is the man, so great is his workthat it is not the least surprising that the very heavens should weep in showers to see him part from us who are not a little loath to bid him adieu. Even as we sipped our cups of tea, we were but sipping the cup of separation and while yet we were taking our fill of the wine of happiness in his delightful company that was far sweeter to the very liquid ruby of the Persian Poets, we had but in us pain gnawing at our hearts to think about his separation. How strange!

"Ay, in the very temple of Delight

Veil'd Melancholy has her sovran shrine".

While yet Dr. Matthews groaned under the honied-load of the blooming wreaths of well-merited praise from his students and others, the crimson Sun was seen to merge in the western billows. And well might we compare our doctor to that bright luminary which took leave of this part of the world only to give the light of life to other lands than ours. For the very sunshine that we miss here in the College in the absence of Dr. Matthews, is but being enjoyed by the suffering bit of humanity that writhe under pain and disease outside.

His kingdom henceforth is but the sick-chamber of the patient.

May God bless that he stand the similitude a little farther and return to us once again in the morning though the dawn be protracted a little. How sweet to rest in the hope that we now part but like twin roses blown by the light-winged zephyr apart only to meet again more close and share the inward fragrance of each other's heart, in the words of the marvellous boy poet Keats.

In the meanwhile, it is surprising to note, that Nature which is reputed to be impartial, by the very hand that elevates one of her children should bring low *pari passu* another of her own. The world to-day is quite as young and ignorant as to the right solution of this wonderful enigma as it was in the beginning of creation albeit the wealth of instances has grown infinitely greater and available in decided super abundance. This anomaly is a standing challenge to the most recondite of philosophers of all time.

While it is distressing to think, that needy as he might be of bodily welfare, though for a while, after his retirement, yet it is an exultant solace to see, that kind and loving as he is to a degree, he has undoubtedly won immortal welfare.

May be the seeming cruelties of to-day might prove to be the kindest acts of to-morrow; the discarded pieces of to-day the very corner stones of to-morrow. Now we cannot help recalling to comfort us the lines of the eastern sage that

"Adversity is like the period of the former and of the latter rain--cold, comfortless unfriendly to man and to animal; yet from that season have their birth the flower and the fruit, the date, the rose and the pomegranate."

It would be but a base requital for his kindness if we defer any longer in performing the pleasing duty of tending our heartfelt thanks to our Dr. Matthews and praying to the Almighty to bless our great benefactor's life with many a flower-strewn spring and fruit-laden summer.

* * * *

"There was a short and delusive lull between two tempests."

* * * *

LATE C. V. VENKATESAN.

No deer ever bounded with a wilder start at the horn of the huntsmen than we did at his sad demise. If tragic death had taken him unawares, the melancholy intelligence but took us more so.

Howbeit, the first flower over his grave where he now sleeps as sound as infancy, had been long since put by one of his loving brethren of the College and if we now stir up anew sad memories of the past, contrary to the propriety of silence near a tomb, it is but to have his name immortalized in the columns of our Magazine with the meagre aid of our humble quill, poor as we are in the verbal embroidery of an orator.

In that very act we cannot help recollecting his genius and virtue. But it is the tender age at which he departed from this world that enlists our sympathies, excites us to tears, nay more, makes our very hearts weep blood. It is most pathetic to observe that scarce did he knock at the door and was allowed into the first chamber of the lore of medicine than the iron-hand of destiny had begun knocking at our comrade's life's door busy bringing his fatal axe upon the poor and unwary victim ere he could raise his finger on his own behalf.

Genius more often than once and more so of late has been defined as infinite capacity for taking pains and judged as such, it is no hyperbole to pronounce that our late class-mate was one such. He was simplicity itself and the very soul of sincerity. Unlike most of us, who, to obtain ease from the rigours of this college life, call in the help of tobacco and become gradually enslaved by that treacherous ally, as Lord Macaulay rightly calls, it he was free from the like pleasing vices. Nor did he ever bow a tranced vassal to the arbitrary queen of sense. That he was one of the ardent votaries who worshipped at the altar of medicine is virgin truth. Nor less so is it that he was one of the sweetest flowers in the fragrant chaplet of our College. If the fulfilment can ever be safely prophesied from the promise, it is not too much to say that the land of the Rupee, at any rate Madras, appears to have lost in him a worthy knight of the scalpel. The plans for a noble career have been rendered abortive. A life that would have won no few laurels before late has now been untimely extinguished. A luscious fruit, while yet a bud, had fallen a prey to the canker worms. The young May-Moon scarce risen had set.

It is not strange, therefore, that we should be drowned in the deep of poignant grief at the sight of such a subject in a premature shroud and quite an early inhabitant of the coffin. The bitter pangs of separation can hardly be over-estimated. Not unfrequently, we say not even half of what we feel. For words are after all but poor vehicles of thought and emotion.

The occasion though too deep for tears can yet find consolation in the musings of a philosopher. Thrushor Nightingale, all is one to the fowler of Death. While it is foolish to lament over death, it is human nature to mourn over quite an young bier.

Every situation however wretched it may seem have some sort of comfort attending it. May be those whom the gods love die young and we cannot but agree with Julian that the soul is more excellent than the body and the liberation of the nobler substance is more to be rejoiced at than wept over.

It is a pity that the latest resources of medicine should prove to be of very little avail against the host of the microscopic enemies of mankind and it sickens our hearts to reflect that our unfortunate friend vexed with the vanity of the aid of man should have hastened his steps towards God, as *ultimum et unicum remedium*.

It is but natural that the death-dealing parasites should muster their best efforts and make short work of the poor victim who if spared would ere long extirpate their very race. If this College pays a greater toll to Death than any other, it is because, we while trying to kill the germs of death draw on ourselves their resentment and mortal vengeance more than the members of our sister seminaries.

Now the irreparable loss of our colleague while making the task of our crusade against disease and pestilence more difficult, has but reanimated us and augmented our animosity towards our adversaries and if we should respond to this stimulus, the world has every hope of being better habitable and the home of peace and prosperity.

In Lighter Vein.

Question.—Who is a House-Surgeon ?

Answer.—He is one who yearns to die a Surgeon.

A fresher presented a crossed cheque at the Bank for encashment "I am sorry," said the clerk, "I can't pay the amount across this counter."

"Oh! Don't You worry, I will come round that side," was the reply.

Jani.—Doesn't your conscience prick you when you utter such falsehoods before me ?

Wife.—Why should it ? You don't believe me !

He.—Every time I kiss you it makes me a better man.

She.—Well, you needn't try to get to Heaven all in one night.

Examiner.—Where is the Zonula of Zinn ?

Student.—It is.....in.....in...It is in.....

Examiner.—Do you know or not ?

Student.—Yes Sir, I know Sir, it.....its.....its in.....it is in my mouth, Sir !.....

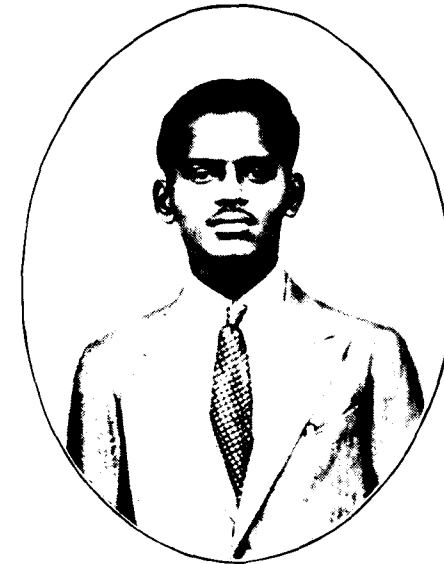
Doctor.—How do you feel to-day.

Patient.—I feel much better, Doctor ; but it still hurts me to breathe ; breathing is the only trouble, Doctor.

Doctor.—Don't you worry ; it will stop bye and bye.

Veeran's advice to his students just before the University examinations :—"Read the questions thoroughly. Answer the questions which you know first. Then only answer those which you do not know.

IN MEMORIAM.



Mr. C. V. Venkatesan was a student of C. R. C. School and passed the S.S.L.C. Examination with distinction in the subjects and was later a student of the Pachaiyappas College and passed Intermediate examination securing a first class and distinction in the optional subjects. He joined the Medical College last July and continued to be one of the bright students of the class.

He was one of the quite students of the class, unostentatious and unassuming by nature. His face used to be always cheerful with a hovering smile about his lips even when misfortune stared at his face. In short he was one of those rare students who do not force themselves upon others. He was always a constant figure in the sports field encouraging our college players.

During the last week, i.e., about the 6th or 7th September he complained that he did not feel quite well and was later on diagnosed as cerebral malaria of which proved fatal and he was suddenly snatched away from his friends and unfortunate relations on 13th September 1933 at 11-30 a.m. It is rather unfortunate that Mr. Venkatesan died so prematurely when he is hardly nineteen years old.

May his soul rest in peace.

Doctor.—What is the treatment for lobar Pneumonia.

Student (III year).—Rest in bed ; hot poultry to sides ; Morphia by mouth.

Powder Magazine.—An Editor, in reply to a young writer who wished to know which magazine would give him the highest position quickest, advised, "A powder magazine, especially if you contribute a fiery article."

Passionate Love.—"You love my daughter?" said the old man. "Love her!" he exclaimed passionately, "Why, I would die for her! For one soft glance from those sweet eyes I would hurl myself from yonder cliff and perish, a bleeding, bruised mass, upon the rocks below." The old man shook his head. "I am something of a liar myself," he said, "and one is enough for a small family like mine."

Doctors in Dispute.—Two physicians at the bed side of a patient disputed as to the nature of the disease. At last one of them ended the discussion, by saying. "Very well, have it your own way now, but the *Post Mortem* will show that I am right." The patient was somewhat discouraged.

Striking with impunity.—"And now, Mrs. Sullivan," said the counsel "will you be kind enough to tell the jury whether your husband was in the habit of striking you with impunity?"

"With what Sir?"

"With Impunity."

"He wuz, Sir, now and then; but he struck me oftener with his fist."

Emetic Useless.—A man refused to take an emetic, saying that it was of no use, as he had tried one and it wouldn't stay in his stomach.

Private letter to husband.—"How can you be certain the lady will read the letter, when you have addressed it to her husband?" "I have put the word '*Private*' in the corner."

An Anglo-Indian old lady asked kuri to lend her a copper and when kuri thrust his hand into his pocket, said "May the blessing of God follow you"; but when he pulled out his cigarette case, she immediately added "And never overtake you."

My friend George and I were having lunch at the hotel when George asked the officious waiter to retire. "Excuse me, Sir," said the waiter "I am responsible for the plates."

The latest case of absence of mind is that of a young lady, who, on returning from a walk with her lover, rapped him on the face, and kissed the door.

A doctor, on calling on a patient who had been sometime ailing, put a fee in to the patient's hand and took the medicine himself which he had prepared for the sick man; he did not discover the mistake till he found himself turning ill and the patient getting better.

An Irish man being asked for a certificate of marriage at a trial, exhibited a huge scar on his head, which looked as tho' it might have been caused with a fire shovel. The evidence was considered satisfactory.

Whence comes it that in Chara's face,

The Lily only has a place?

Is it that the absent rose,

Is gone to *paint* her husband's nose?

A teetotaler refused to sit for his portrait unless it was painted in water-colours.

A condemned prisoner was asked by some of his unfortunate companions to share their repast with them, the previous night. He refused saying, "I never eat anything that I expect will not digest."

"Mr. Thompson presents his compliments to Mr. Simpson, and begs to request that he will keep his *doggs* from trespassing on his grounds."

"Mr. Simpson presents his compliments to Mr. Thompson, and begs to suggest that in future he should not spell 'dogs' with two gees."

"Mr. Trompson's respects to Mr. Simpson, and will feel obliged if he will add the letter 'e' to the last word in the note just received, so as to represent Mr. Simpson and lady."

"Mr. Simpson returns Mr. Thompson's note unopened, the impertinence it contains being only equalled by its vulgarity."

The correspondence here terminated.

A man married a little wife. Of all evils, choose the least.

One of the items in a local daily read as follows "The maddened animal bit Mr. Jinks and several *other dogs*."

Athletics.

The Bangalore Tour of the Madras Medical College Athletic Club.

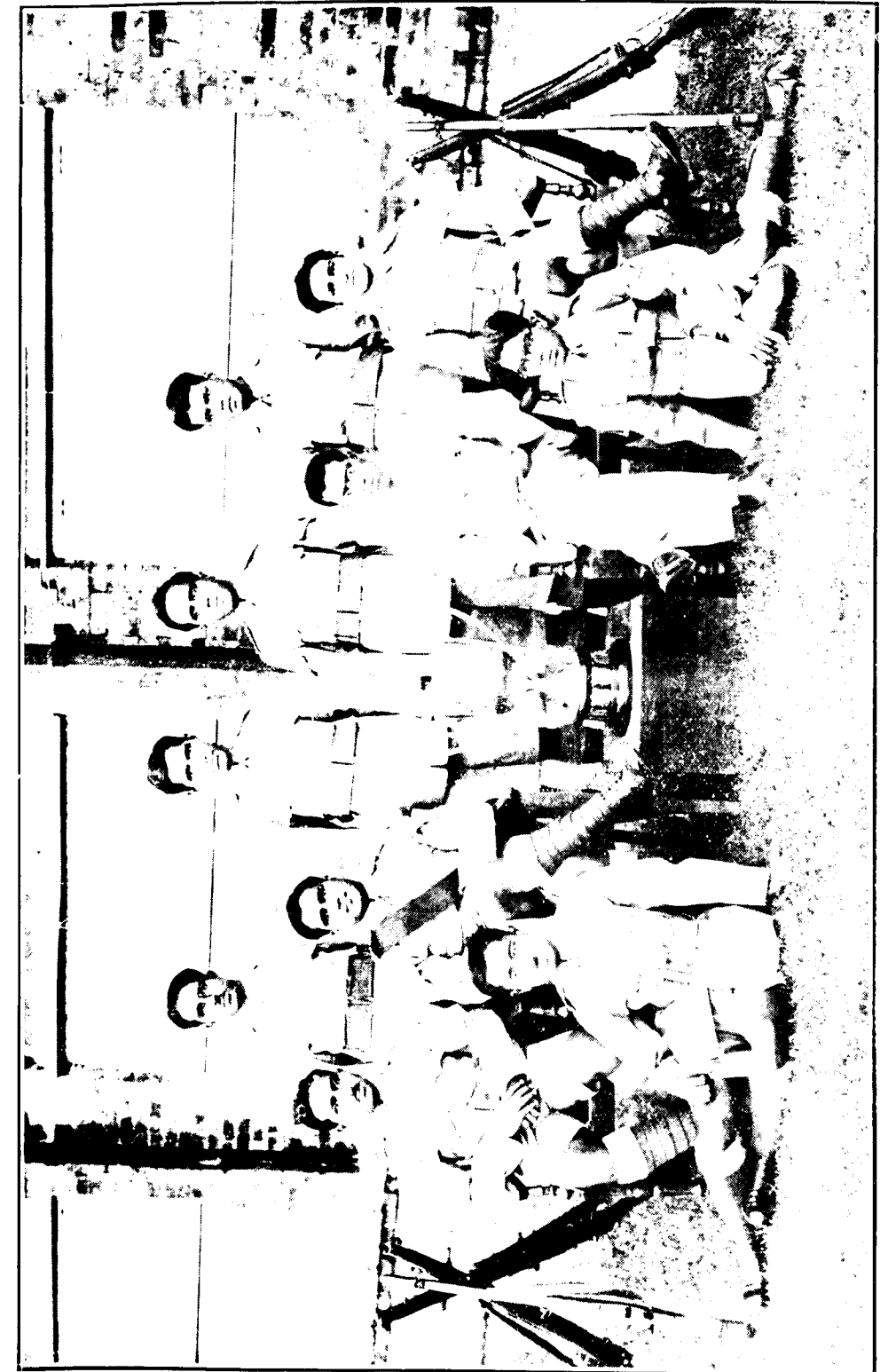
Perhaps for the first time in the history of the institution the Madras Medical College Athletic Club sent a team of players to Bangalore during the last Michaelmas holidays to play a series of cricket, hockey and football matches with local teams.

The party consisting of about 30 students, accompanied by the staff sports secretary started by the Bangalore Passenger on 21st September 1933.

The party reached Bangalore on the morning of 22-9-33. The journey was quite a pleasant one, including the breakfast that the party took at Bowringpet station. The hotel keeper in charge could not cope with the demand for "Iddlis", "Dosais" and so on and it wasn't his fault. For, was he informed that the Medicoes were coming and that they were tolerably good eaters? The result was, that none of the other passengers in the train got anything to eat and moreover the hotel keeper could not work out the actual hotel bill (Moral:—In future when Medicoes are going on tour, all hotel keepers on the wayside stations are to be informed by wire).

At Bangalore Cantonment station the party were met by our energetic organiser Aleem (who I think, has mistaken his profession: He would have been better off as a representative of Ram Mohan's Tourist Agency). The Anglo-Indian members of the team were accommodated in the St. Joseph's College Hostel and the others in the Central College Hostel. The arrangements for boarding, etc., left nothing to be desired, owing to the trouble taken by the Cricket captain, G. A. Aleem.

Detailed accounts of the matches are given below by the respective Captains. D'Costa and Cullen turned out to be the "hammerers" of the College in football, while Snow was a steel fortress in the goal; in fact people in Bangalore began to ask if he wore the Habibullah charm round his neck. Garson was the main hitter of the college in Cricket



Winners of the Guard Mounting Cup at the last Camp of the U. T. C., with the Officer Commanding "A" Company (Medical).

with Dr. Khote and Pereira a close second and people were impatient till these three got out. Rama Rao proved to be the demon bowler of the team and he added two feathers to his cap by bowling out Capt. Rogers and Kanickam both for "ducks". (We are surprised that he has not been invited for the test trials at Bombay.) In hockey, Satur, Pereira and D'Costa were the chief scorers while Cullen (the Captain) was the mainstay in the defence, playing up to the Olympic standard in every match.

Other members of the team distinguished themselves in other ways. Aleem, the "Manager" or "master of ceremonies" worked hard to attend to the arrangement (and he likes to be told so, at least half a dozen times daily). "A. V. R." could take 4 cups of Coffee and half a dozen 'Iddlis' at 2 minutes notice.

On the whole the team gave a good show. Altogether ten matches were played : 4 in football out of which two were glorious victories, two were defeats (of which one was a miserable one) ; three in hockey out of which two were glorious victories and one was a draw ; three in cricket out of which two were drawn and one was a victory. The following is a summary of the results :

Cricket.

- 23-9-33. Vs. Bangalore European Gynkhana : Drawn (Garson 27 : Rama Rao 5 for 30.)
- 24-9-33. Vs. St. Joseph's College : Victory by 5 wickets : (Garson 50 not out : Rama Rao 5 for 15.)
- 26-9-33 & } Vs. Kanickam's Eleven : Drawn (Garson 52 :
27-9-33. } Dr. Khote 50 not out (Rama Rao 4 for 51.)

Football.

- 22-9-33. Vs. Crescents (One of the strongest teams in Bangalore) : Won 3—1
- 24-9-33. Vs. Blue (one of the strongest teams in Bangalore) : Lost 1—0 (a creditable performance in spite of the defeat).
- 26-9-33. Vs. St. Joseph's College : Won 6—1

30-9-33. Vs. South Staffords : Lost 8—0

Total goals scored for the College 9

Against the College 10

Hockey.

25-9-33. Vs. Sappers & Miners (The strongest regimental team at Bangalore) Drawn 3—3

27-9-33. Vs. St. Joseph's College (Holders of the cup in the Bangalore Tourney) : Won 2—0

28-9-33. Vs. Bangalore Indians (The strongest Indian team in Bangalore) Won 7—2

Total goals scored for the College, 12

Against „ 5

From the above it will be seen that the College was unbeaten in hockey and cricket which is a creditable record for a College team, facing as it did, some of the "combined" teams including holders of trophies in Bangalore.

D'Costa and Cullen created such an impression that the Secretary was requested to "lend" their services to one of the local teams for the Mysore Dasara Tourney (The request, of course, was not granted).

While speaking about the achievements of the individual members of the teams, it would be unjust if I do not mention that every player in the team did his best to maintain the prestige of the College. Though the odds were against them the College team always rose to the occasion and the winning goal or equaliser was often scored in the last few minutes. It was acknowledged in Bangalore that of all Colleges which toured there recently, ours made the best show especially in hockey. The staff Secretary was bombarded with requests to arrange some more matches even at unusual hours such as 7 A. M. or 9 A. M. and it was only for want of time that more matches could not be played. (We are happy to announce that our College has beaten the Loyola College, holders of the Inter-Collegiate trophy in hockey by the convincing margin of 5 goals to one though we were unlucky to be beaten by the Christians by the odd goal in three).

Some of the members of the team visited Mysore on the 29th of September, which happened to be the last day of the Dusarah celebration. They visited the Krishnarajasagara Dam at Kannambady, Seringapatam Fort, Chamundi Hill temple and Palace, besides the gorgeously decorated and illuminated Palace at Mysore.

The party returned to Madras on the night of 1-10-33. The tour was a grand success and augurs well for future ones.

M. N. P.

Our Football team at Bangalore.

Our team did some fine work at Bangalore during this Michaelmas. We played some of the very best teams there and won some of the hard-fought matches.

Out of the four matches played, though we lost two, we can confidently be ranked as one of the best teams that visited Bangalore. We met the 'Crescents', one of the best teams there, and had a glorious victory by 3 goals to 1. Cullen scored once and D'Costa twice. Next we met the favourites of Bangalore, viz., 'the Blues' and though we were greatly handicapped in not having D'Costa we gave them many anxious moments. We lost this match by 1—0. The first college team we met in the tour was the St. Joseph's College, whom we defeated easily by a large margin of six goals to 1. D'Costa scored 3 goals, Cullen two and Haridas 1. The only bad defeat we had was from the South Staffordshire Regiment—the runnersup of the All-India Tournament when we were beaten by 8—0. Though we could not have won them, we could have given them a much better fight, had not our players funked at our booted opponents. Apart from this we were unfortunate in not having Sircar our centre-half the real backbone of our defence.

At any rate, we have left a name behind and have shown them what the Madras Medical College can do.

(Sd). A. K. HARIDAS,
Captain.

CRICKET.

Our first fixture was on the 23rd September with the European Gymkhana, which we played on their grounds. Some of our players were new to the conditions prevailing in Bangalore, viz., the light and the

turf wicket. The European Gymkhana is a strong team having players like Captain Rogers (who has been selected for the Viceroy's XI against the M. C. C.). Luck was against us in this particular match, for some of our best players left home easy "sitters." In spite of all this, we ought to have beaten them if we had about 15 mts. more.

The Home team won the toss and elected to bat. They were 9 wickets for 116 runs and declared.

Having only an hour and 15 mts. left to make 116 which was no mean task, against good bowling our players forced the game and made 88 runs for 3 wickets, when the stumps were drawn. Thus the match ended in a draw.

The following are the detailed score :—

EUROPEAN GYMKHANA.

Low, c. Garson, b. Rama Rao	...	4
O'Donnell, c. D'Costa, b. Garson	...	45
Capt. Rogers, b. Rama Rao	...	0
Sprins, b. Rama Rao	...	39
Lawrence, c. Carson, b. Rama Rao	...	0
Edmunds, c and b. Garson	...	0
Pihcaim, c. D'Costa, b. Rama Rao	...	2
Bogle, c. Rama Rao, b. Garson	...	5
Woods, b. Aleem	...	6
Enery, not out	...	8
Ball, not out	...	5
Extras	...	4

For nine wickets and declared ... 116

BOWLING ANALYSIS.

	O.	M.	W.	R.
Rama Rao	...	16	5	5
Aleem	...	15	0	1
Rajagopal	...	7	2	0
Garson	...	10	5	3

MEDICAL COLLEGE.

R. A. Garson, c. Ball, b. Pihcaim	...	27
C. J. Pereira c. Rodgers, b. "	...	16
Dr. Khote c. " b. "	...	9
A. V. Rajagopalan, not out	...	9
D'Costa, not out	...	17

G. A. Aleem	}	Did not bat.
E. Wilkinson		
Tiruvenkatachari		
B. P. Shiva		
Rama Rao		
E. Cullen		

Extras ... 10

Total for 3 wickets ... 88

II. Our 2nd fixture was on 24th against the St. Joseph's College combined team, played on their grounds. This match we played on a mat wicket and we were able to show our real self, there was a change in the players Shumshuddin, replacing Cullen, to give Cullen rest for the evening football fixture.

The Home team won the toss and elected to bat. They could not play confidently to the accurate bowling of Rama Rao, the whole team was out for a paltry 75 runs.

Our "Hobbs and Sutcliffe", viz. Garson and Pereira, opening batsmen (who are mainly responsible for the huge scores we used to put up even against very good bowling) entered and were playing confidently, when Pereira was out for a brilliant catch by his younger brother. In this match Garson played very well and he was unbeaten with 50 at the close of the match. We made 89 runs losing only 5 wickets and thus won the match by a comfortable margin of 5 wickets, and 14 runs. The following are the detailed scores :—

ST. JOSEPH'S COLLEGE.

Hogg, b. Rama Rao	...	11
Srinivasan, b. Rama Rao	...	1
Donaghey, b. Rama Rao	...	2
Shantappa, c. Thiruvenkatachari, b. Rama Rao.		7

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Hameed, c. Aleem, b. Wilkinson	...	11
Truter, c. D'Costa, b. Rajagopalan	...	17
Godfrey, c. Wilkinson, b. Rama Rao	...	7
Roye, c. Garson, b. Wilkinson	...	0
Bhasker, c. D'Costa, b. Aleem	...	8
Pereira, b. Wilkinson	...	1
Thurley, not out	...	1
Extras	...	9
Total	...	75

BOWLING ANALYSIS.

	O.	M.	R.	W.
Rama Rao	... 16	4	15	5
Aleem	... 9.1	3	19	1
Rajagopalan	... 7	3	11	1
Garson	... 4	1	8	...
Wilkinson	... 3	...	10	3

MEDICAL COLLEGE.

R. A. Garson, not out	...	50
C. J. Pereira, c. Pereira, b. Godfrey	...	4
Dr. Khote, l. b. w. b. Godfrey	...	2
S. F. D'Costa, c. Srinivasan, b. Godfrey	...	0
Thiruvengkatachari, not out	...	12
B. P. Shiva, c. Pereira, b. Srinivasan	...	9
Aleem	} Did not Bat	
Wilkinson		
Rajagopalan		
Rama Rao		
Cullen		

Extras ... 12

Total for 5 wickets ... 89

III. Our last and final fixture in Bangalore was with the redoubtable "Kanickam's Eleven" on 26th and 27th. Some of our players (and especially those who did not get a batting chance in the two previous

Athletics

Matches played) did not sleep the previous night in their anxiety and fear).

This was a two day fixture, and our opponents had players like "Darashah" the Presidency bowler and Kanickam the Veteran Presidency player, and the pick of Bangalore players.

We chose the best side possible.

The play commenced at 12-30 P.M. The Home team won the toss, and elected to field.

Our "Hobbs and Sutcliffe" played very well indeed and they put on 90 runs for the 1st wicket, when Pereira was out for a silly stroke. In this match Dr. Khote showed his real self and he was unbeaten with 50 runs. The whole team was out at 3 P.M. for 190 runs.

The Home team entered to bat and then made 60 for two wickets. Stumps were drawn at 4 P.M.

Play was resumed the next day, and our bowling and fielding, had considerably improved. Rama Rao, got into his form again and clean bowled, Kanikam for a duck, with a beautiful leg break. The whole team was out for 127 runs.

Having a lead of 63 runs we started on our second innings though we did not get the lead as we got in the previous innings the others made amends, and we scored 111 for 8 wickets.

The visitors entered on their 2nd innings, lost their 3 batsmen early, but Kanikam showed his real self now and played a good game. They were 74 for 3, when stumps were drawn for the day leaving the match drawn.

The following are detailed scores :

MEDICAL COLLEGE, 1ST INNINGS.

R. A. Garson, b. Ramamurthy	...	52
C. J. Pereira, c. "	...	32
Thiruvengkatachari, run out	...	5
Dr. Khote, not out	...	50
S. F. D'Costa, b. Ramamurthy	...	19

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B. P. Shiva, b. Darashah	...	0
Aleem, b. Darashah	...	7
A. V. Rajagopalan, b. Seshagiri	...	10
Wilkinson, l. b. w. Darashah	...	0
Rama Rao, b. Darashah	...	3
Shumshuddin, lbw. b. Ramamurthy	...	0
Extras	...	12
		190

BOWLING ANALYSIS.

	O.	M.	W.	R.
Ramamurthy	10	...	4	40
Darashah	11	3	4	29

KANIKAM'S ELEVEN, 1ST INNINGS.

Ramamurthy, run out	...	43
Darashah, "	...	30
Doraiswamy Raju, b. Rama Rao	...	4
Ramiah, run out	...	0
Prabakhar, b. Rama Rao	...	4
Kanikam, b. "	...	0
Shantappa, c. T. V. Chari, b. Rama Rao	...	15
Mohan Singh, not out	...	0
Seshagiri Rao, L.B.W. Aleem	...	0
Cyril Pires, c. Dr. Khote, b. Aleem	...	8
Hameed, c. D'Costa, b. Wilkinson	...	12
Extras	...	11
		127

BOWLING ANALYSIS.

	O.	M.	W.	R.
Rama Rao	18	4	4	51
Aleem	16	1	2	45

Athletics

MEDICAL COLLEGE, 2ND INNINGS

R. A. Garson, b. Ramamorthy	...	28
C. J. Perirra, l.b.w. "	...	0
Thiruvengkatachari, b. Kanikam	...	4
Dr. Khote, c. Doraswamy, b. Ramamurthy	...	1
B. P. Shiva, c. Prabakar, b. Seshagiri Rao	...	22
G. A. Aleem, c. and b. Ramamurthy	...	4
D'Costa, c. Doraswamy, b. Seshagiri Rao	...	0
A. V. Rajagopalan, run out	...	16
E. Wilkinson, c. Seshagiri, b. Kanikam	...	23
Rama Rao, not out	...	0
Shumshuddin "	...	0
Extras	...	13

BOWLING ANALYSIS

		O.	M.	W.	R.
Ramamurthy	...	9	...	4	36
Seshagiri Rao	...	7	1	2	17
Darashah	...	5	1	...	29

KANIKAM'S ELEVEN, 2ND INNINGS

Kanikam, not out	...	48
Darashah, l.b.w. Rama Rao	...	1
Ramamurthy, c. Wilkinson, b. Rama Rao	...	8
Shantappa, c. D'Costa, b. Shumshuddin	...	17
Cyril Pires, not out	...	0
Extras	...	0
for 3 Wickets	...	74

BOWLING ANALYSIS

	O.	M.	W.	R.
Rama Rao	...	5	...	2 21
Shumshuddin	...	1	...	1 53

G. A. ALEEM,
Captain.

U. T. C. Notes.

The College Contingent of the U. T. C. started this year with 38 on the Rolls, of which 15 were Recruits. Recruitment, although better than last year was not yet been upto our sanctioned strength. The proposed arrangements to hold the Annual camp after the December Examinations should prove an incentive to our students to join the Corps. Moreover the College has been fitted up with its own Armoury this year to enable the parades to be held in our College premises and the number of parades have been cut down to suit the convenience of our men.

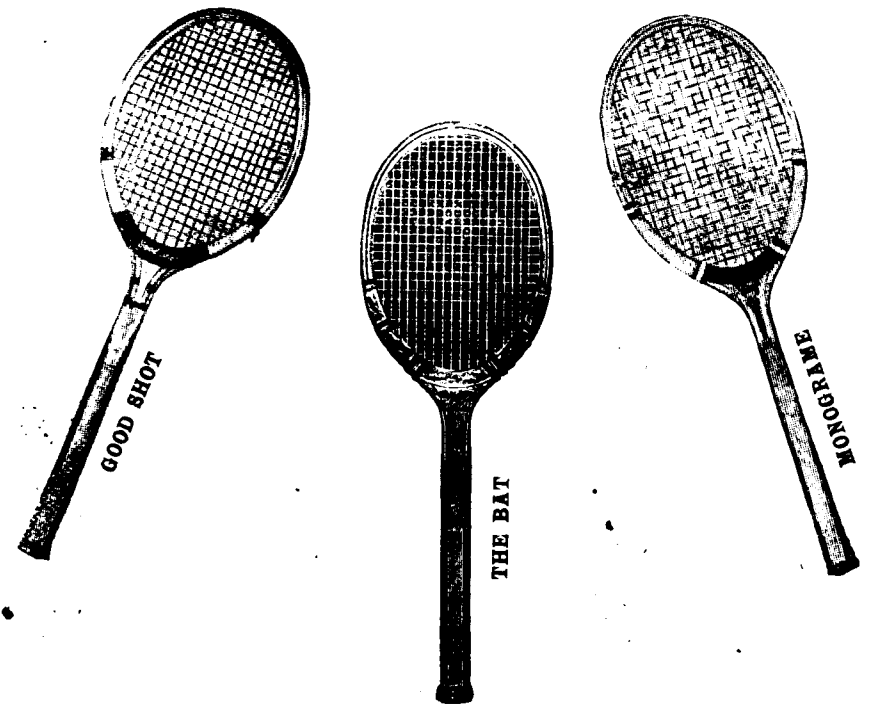
The Annual Camp was held in September at Pallavaram and it was very gratifying to note that the attendance was exceptionally good—there was not a single absence. In spite of the small number and the handicaps resulting therefrom our young warriors gave an extraordinarily good account of themselves by not only winning the Guard Mounting Cup, but also doing creditably well in the Drill competitions. The Hockey cup was also won by the Medicoes along with the Engineers.

May we not hope that the sportsmen and athletes of our College, of whom we are so proud, will join the U. T. C. and help to bring up the reputation of our contingent in the field also?

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[Sd.] K. N. GOEL,
Capt. Late I.M.S.,
Medical Officer Incharge,
Civil Hospital.



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[Sd.] P. B. MOTIVALO,
Chief Medical Officer,
Bhavanagar State,
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[Sd.] A. J. DODHI,
W.M.S.,
Medical Officer Incharge,
Women's Hospital.



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