

The Madras Medical College Magazine



JULY 1936

ESTEROL-STEARN'S

(Benzyl Succinate)

$(\text{CH}_2\text{COOCH}_2\text{C}_6\text{H}_5-\text{CH}_2\text{COOCH}_2\text{C}_6\text{H}_5)$

FOR SMOOTH MUSCLE SPASM

Benzyl medication was introduced to the medical profession in 1919 by Dr. D. I. Macht of John Hopkins University, as a satisfactory non-toxic substitute for opiates in the control of pain due to cramps, spasm or excessive contractions of unstriated muscles in the various structures of the body.

Benzyl Succinate is a snow white crystalline powder, practically tasteless and odorless, and absolutely devoid of all nauseating tendencies.

INDICATIONS.

In general, Esterol steams is indicated in the treatment of any condition due to spasm of smooth muscles.

Among these conditions are:

Dysmenorrhœa
Diarrhœa with cramps
Singultus or Hiccough
Asthmatic conditions
Spasmodic circulatory conditions
Spastic constipation
Biliary colic
Uretral colic

CATALOGUE ON APPLICATION.

Sole Distributors for Madras Presidency:—

APPAH & COMPANY,
CHEMIST DEPARTMENT,
MADRAS.

When writing to Advertisers, please mention this Magazine.

Antiphlogistine

TRADE MARK

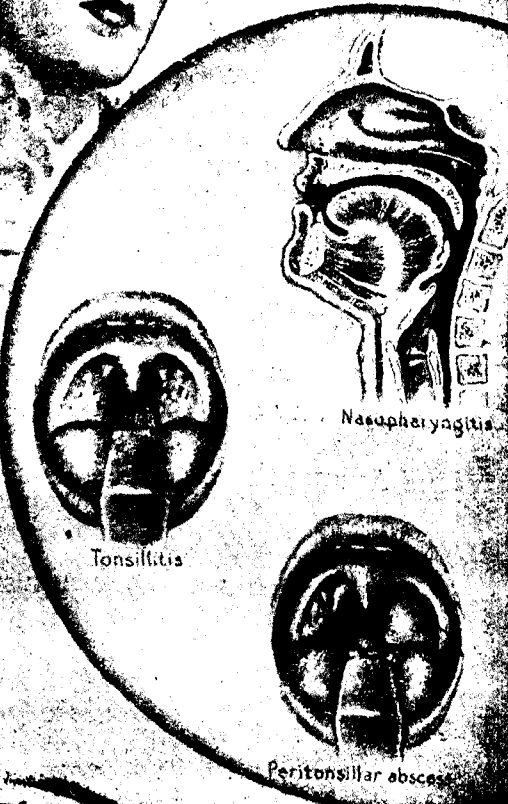
IN NOSE AND THROAT DISEASES



HOT, thick applications of Antiphlogistine—applied to the neck and, if necessary, entirely covering the neck from ear to ear—are of undisputed aid in effecting a reduction of inflammation and congestion in the pharyngeal and laryngeal tissues.

By providing continuous moist heat for anywhere from twelve to twenty-four hours, Antiphlogistine produces local arterial hyperemia, thus hastening the destruction of the organisms causing the infection and accelerating the processes of repair. Antiphlogistine also possesses anesthetic and relaxing properties, is absolutely harmless and non-injurious.

In nose and throat diseases such as those mentioned, and in numerous other conditions, Antiphlogistine has been recommended for many years with uniformly favorable results. A sample of this plastic dressing, together with literature, will be sent you on request.

THE DENVER CHEMICAL MFG. CO.
163 VARICK STREET, NEW YORK, N. Y.

MULLER & PHIPPS (India), LTD., P. O. Box 773, BOMBAY.

When writing to advertisers please mention this Magazine.

Your favourite House FOR OPTICAL GOODS



Latest Styles! Lowest Rates!!

Concession rates for Students
and Medical Profession.

RADHA BROS.,

Ophthalmic Opticians,

174, BROADWAY, MADRAS.

PLEASE REMEMBER

that you can always depend
upon good service and quality
at **NEO KOMALA VILAS**
who have specialised in their
business for the past ten
years.

Neo-Komala Vilas Hotel.

Francis Joseph Street,
G. T., MADRAS.

SELECT MEDICAL PUBLICATIONS

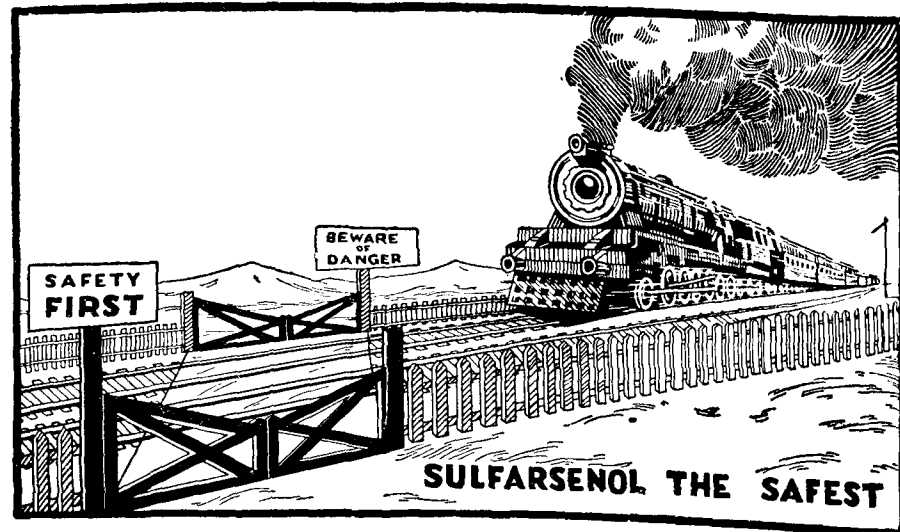
	Rs.	A.
Medical Annual 1935	...	13 8
Gray's Anatomy—1935	...	26 0
Frazer—Anatomy of the Human Skeleton—1933	...	19 4
Bohler—Treatment of Fractures—1935	...	28 14
Wilson and Cochrane—Fractures and Dislocations	...	30 15
Berkeley and Bonney—Text book of Gynaecological Surgery—1935	...	30 15
Beaumont—Essentials of Medicine—1934	...	14 7
Kelly—Gynaecology	...	34 6
Bourne—Synopsis of Obstetrics and Gynaecology—1935	...	10 5
Eden and Lockyer—Gynaecology—1935	...	26 2
Boyd—Text book of Pathology—1934	...	30 15
Clarke—Applied Pharmacology—1935	...	12 6
Kerr and young—Combined Text book of Obstetrics and Gynaecology	...	24 1
Barker—Treatment of the Commoner Diseases	...	8 9
Thorak—Surgical Errors and safeguards	...	30 15
Kelly Ward—Electro-Surgery	...	24 1
Mack's Veterinary Dictionary	...	14 7

P. VARADACHARY & COMPANY,

Medical and Law Book-sellers,

LINGHA CHETTY STREET, :: :: MADRAS.

When writing to advertisers please mention this Magazine.



ANGLO-FRENCH DRUG COMPANY

*Patients prefer
painless
injections!*

ARSENO-SOLVENT
ensures
painless administration of
SULFARSENOL

When writing to advertisers, please mention this Magazine.

Mofussil orders will not be executed without advance of Rs. 5.

THE COLLEGE BOOK COMPANY,

BOOK-SELLERS & PUBLISHERS,

(Appah Buildings' Upstairs)

286, ESPLANADE, MADRAS.

LATEST EDITIONS ONLY WILL BE SUPPLIED.

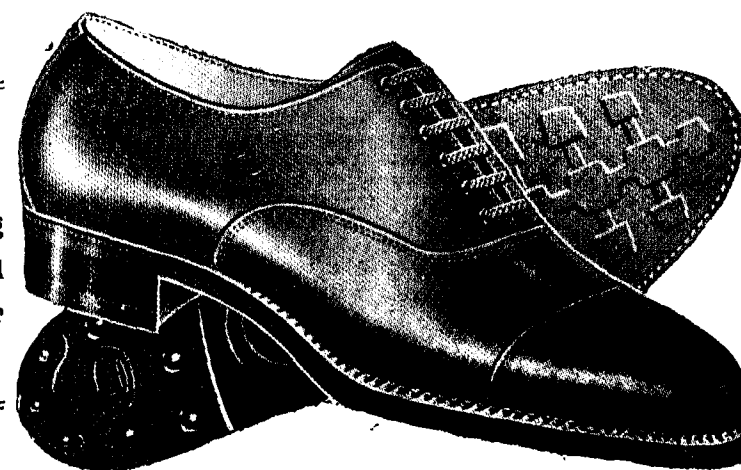
LIST OF MEDICAL BOOKS.

	Rs.	A.	P.		Rs.	A.	P.
Gray's—Anatomy Edn. 1935	... 25	0	0	Jellet—Manual of Midwifery	... 16	14	0
Cunningham's Manual of Practical Anatomy	... 7	8	0	Berkley—Ten Teacher's Midwifery 1934	... 11	7	0
3 Vols. I, II & III each 1935	... 12	0	0	Hutchisons—Diseases of Children 1930	... 13	14	0
Macgregor's Surgical Anatomy 1934	... 9	12	0	Goodheart and Still—Diseases of Children	... 18	10	0
Treves Surgical Applied Anatomy 1934	... 16	10	0	Cole's—Physiological Chemistry 1933	... 8	8	0
Taylor's—Practice of Medicine 1930	... 19	0	0	Clark—Applied Pharmacology	... 11	0	0
Price—Text book of Medicine 1933	... 17	12	0	Bigger—Bacteriology 1935	... 8	8	0
Saville—Clinical Medicine 1933	... 14	0	0	Cameron's—Bio Chemistry	... 10	5	0
Conybere—Medicine 1932	... 8	0	0	Cushman—Pharmacology 1934	... 15	12	0
Wheeler & Jack—Hand-book of Medicine	... 9	8	0	Manson and Bars—Tropical Diseases	... 20	8	0
Rogers and Megau—Tropical Medicine	... 16	0	0	Hutchinson and Hunter—Clinical Methods	... 7	14	0
1935	... 26	6	0	1935	... 7	15	0
Starling—Human Physiology 1933	... 18	0	0	Pearce Gould—Surgical Diagnosis	... 7	5	0
Hqwell's Physiology 1933	... 18	4	0	Treves—Surgical Operations 1930	... 12	2	0
Rose and Carless—Surgery 1933	... 11	12	0	Parson—Diseases of the eye 1934	... 10	4	0
Romanis and Mitchner—Surgery 2 Vols. 1934	... 22	8	0	May and Worth—Diseases of the Eye 1934	... 27	12	0
Haygroves—Synopsis of Surgery 1933	... 17	3	0	Rosenae—Hygiene and Preventive Medicine...	... 10	5	0
Muir—Text-book of Pathology 1933	... 14	7	0	Shattock—Surgical Diagnosis 1930	... 14	7	0
Green's Pathology 1934	... 9	0	0	Tidy—Synopsis of Medicine 1934	... 10	14	0
Beaumont Medicine for Practitioners 1934	... 6	14	0	Horder & Gow—Medical Diagnosis	... 11	4	0
Do. and Dodds Medicine 1914	... 8	9	6	Samson Wright—Applied Physiology 1934	... 7	3	6
Hale White—Materia Medica 1935	... 7	8	0	Houstons Inter Physics	... 11	0	0
Whitla—Materia Medica 1933	... 11	7	0	Borradaile Manual of Zoology	... 14	7	0
Gosh Matria Medica 1933	... 11	4	0	Hamilton Baily Physical Signs in Clinical	... 14	7	0
Berkley Ten Teachers—Diseases of Women	... 11	7	0	Surgery	... 20	10	0
1934	...	...	...	Ballp and Love Short practice of Surgery	...	...	...
Johnstone—Midwifery 1934	...	...	...	in one Vol. 1935	...	...	...

V. RATNA & CO.,

CHROME LEATHER WORKS,

Manufac-
turers of
Doctors Bag
Holdall and
all Leather
Requisites



SHOES
BOOTS
SLIPPERS
AND
SANDALS

LEADING SHOP FOR FASHION & STYLE.

184, BROADWAY

MADRAS.

When writing to advertisers, please mention this Magazine.

REVOLUTION IN STETHOSCOPY

— SEVERAL HUNDREDS ARE IN REGULAR USE —

"SURGICO" NEW PATENT REVOLVING STETHOSCOPE

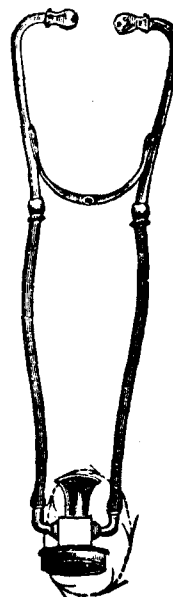


Fig. 3619. Patent Binaural Revolving Stethoscope, with chestpiece with phonendoscopic end for general purposes, and small ebonite mount for intercostal space. The chestpiece is constructed enabling rotation as indicated by arrows in the illustration. This enables the instrument to be used at various angles with the tubes, and gives an uninterrupted sound channel, and magnifies heart sounds without distortion. By revolving the chestpiece to different angles with the tubes the volume of sound is graduated at will and thus the instrument proves an efficient differential Stethoscope. No undressing of patient required. Folds compactly.

Complete, Rs. 10-0.
Chestpiece only, Rs. 6-8.

"SURGICO" PHONOPHORE BINAURAL STETHOSCOPE

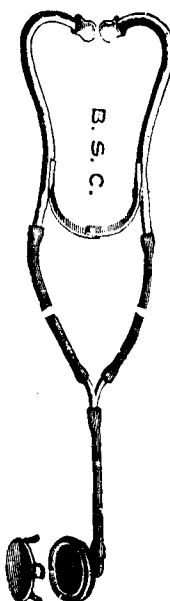


Fig 3621. Advantages: The chestpiece is set at right angles and is easily inserted beneath the clothing, being about the size of a small watch. Adjustable to any position, enabling bases of lungs to be examined without the patient sitting up; heart examined whilst the patient in prone position; foetal heart heard more distinctly with the pregnant women lying face downwards; and child's chest can be examined over its whole extent whilst sitting behind the child.

Complete, Rs. 8-0.
Chestpiece only, Rs. 4-8.

DOWN BROS.' Binaural STETHOSCOPE

Fig. 3621 A—The well-known INDIA model, with metal earpieces, Skinner's all metal combined Chestpiece with thumb-rest and adjustable spring, fitted with best India rubber tubing. Rs. 15-8.
Fig. 3621 B. CHESTPIECE only (spare), Skinner's all metal, with thumb-rest, Rs. 6-12.

MODERN "INSTANTER" PRECISION THERMOMETER

PERFECTLY
ACCURATE
MODEL



READING
AT A
GLANCE

Fig. 3555 A.—Here is a reliable *new* type of Thermometer. It is expressly designed for tropical use, for obtaining a clinical temperature reading *at a glance*. The divisions and figures are arranged in a novel manner. One side of the tube column has its divisions in *black* up to a normal temperature (98°4° F.), and on the other side are divisions in *red* above normal temperature. Thus the degree of temperature is immediately indicated—a very *important feature* in diagnosis. This, it will be seen, gives a great advantage over *all* existing types, and does away with the difficulty that exists in taking clinical readings. A doctor can quickly determine the patient's temperature without that distressing delay so often associated with the use of a clinical thermometer of the old type.

IF TEMPERATURE READINGS { (a) are on bottom black scale, SUBNORMAL,
(b) are on top of scale, ABNORMAL or FEVER,
(c) between top red and bottom black scale, NORMAL.

Lens magnifying tube, $\frac{1}{2}$ minute reading. The above arrangement of the scale greatly facilitates the "finding" of mercury in the tube even by a novice. *British* manufacture—OF *UTMOST ACCURACY*. Used with satisfaction in several institutions. Complete in nickelled case. DOZEN, Rs. 12-0.

BOMBAY SURGICAL CO.

Telegrams: "SURGICO"

NEW CHARNI ROAD, BOMBAY, 4

Telephone No. 41936

—Surgeons' Instruments and Hospital Supplies of Merit—
Write us *ALL* your requirements. Particulars free. New revised prices on all lines.

When writing to advertisers, please mention this Magazine.

THE Madras Medical College Association

All "Old BOYS" of the College are earnestly invited to become members and keep in touch with their "Alma Mater".

SUBSCRIPTION.—Annual for old student members Rs. 5 including free issue of the Medical College Magazine and other publications of the Association.

THE Madras Medical College Magazine.

Issued quarterly under the auspices of the Madras Medical College Association.

The activities of the Association and the Madras Medical College and original articles on Medical Subjects, Clinical lectures and case reports on interesting cases are published in the Magazine.

Rates of Subscription. Rs.

For non-members annually	...	...	...	...	4
Single Copy	...	...	...	...	1

A GOOD MEDIUM FOR ADVERTISEMENTS.

Rates of Advertisement.

	Full Page	Half Page	Quarter Page.
	Rs.	Rs.	Rs.
Ordinary pages—One insertion	... 7/8	4/8	2/4
Four insertions	... 22/8	13/8	7/8
Outside of cover—Four insertions	... 45 per page.		
Inside of cover—Four insertions	... 30 per page		

For further particulars, please apply to—

THE EDITOR,
Madras Medical College Magazine,
Medical College, Madras.

TO LET.

AN IDEAL BOOK FOR MEDICAL STUDENTS
A HANDBOOK OF MODERN PHYSIOLOGY

BY

R. K. PAL M.Sc., M.B. (CAL.), D.Sc.,
M.R.C.P. (EDIN.), F.R.S.E.,
Professor of Physiology, Prince of Wales
Medical College, Patna,

AND

A. CHAKRAVARTI, B.Sc., M.B. (CAL.),
M.R.C.P. (EDIN.),
Department of Physiology and Bio-
Chemistry, Medical College, Calcutta ;
Fellow of the Royal Society of Tropical
Medicine and Hygiene, London.

*With numerous illustrations and some
coloured plates,*

The Book Company Limited,
CALCUTTA
1934

Rs. 7-8.

YOUR COLLEGE RESTAURANT

will undertake to cater for
all your Socials, Tea and
Dinner Parties.

Why not you always
remember and encourage
it when it is at your service?

Medical College Restaurant
MADRAS.

When writing to Advertisers, please mention this Magazine.

**The Madras
Medical College Magazine**

GENERAL EDITOR

Dr. S. Thambiah, M.C., M.R.C.P., D.T.M. & H.



Vol. XV, No. 4

JULY, 1936.

The Madras Medical College Magazine

Published under the auspices of
The Madras Medical College Association

MAGAZINE COMMITTEE

President : Lt.-Col. K. G. Pandalai, F.R.C.S., I.M.S.

General Editor : Dr. S. Thambiah, M.C., M.R.C.P.,
D.T.M. & H. (Lond.)

Associate Editor : Dr. N. S. Narasimhan, F.R.C.S.

Student Editors : { Mr. J. J. Dharmaraj (Final Year.)
 { Mr. S. Balakrishnan (Final Year.)

Honorary Treasurer : Dr. K. S. Viswanathan, B.A.,
M.B.B.S., B.S.Sc.

Secretary and Publisher : Mr. R. Rajagopal Reddy.

Contributions are invited from Members of the
Medical Profession. All communications should be
addressed to:

The Editor, Medical College Magazine, Madras.

RATES OF SUBSCRIPTION.

Students (Including postage) ... Rs. 2 per annum.
All others " ... Rs. 4 per annum.

AN EXCELLENT MEDIUM FOR ADVERTISEMENT

For full particulars apply to the Secretary.

THE MADRAS MEDICAL COLLEGE MAGAZINE.

Vol. XV

July 1936

No. 4

CONTENTS.

PAGE.

1. SOME PRINCIPLES IN THE TREATMENT OF
LEPROSY.
By Capt. S. Thambiah, M.C., M.R.C.P., D.T.M. & H.,
F.D.S. ... 267
2. THE TREATMENT OF DIABETES MELLITUS
By K. C. Paul, M.D. ... 273
3. THE BED BUG
By S. F. A. ... 287
4. A CASE OF SUBACUTE BACTERIAL ENDOCARDITIS
By R. Balachandran Thampi, M.B. & B.S. ... 290
5. EVOLUTION OF SEX
By Dr. Eileen J. Macfarlane ... 304
6. EPITOME ... 316
7. EDITORIAL NOTES ... 324
8. ASSOCIATION NOTES ... 327
9. AN APPEAL ... 332
10. 5TH MADRAS U. T. C. ANTHEM ... 334
11. THE NEED FOR AN INDIGENOUS PROFESSION
OF DENTAL SURGERY IN INDIA
By C. Frampton Badcock, L.D.S., R.C.S. (ENG.) ... 336
12. IN LIGHTER VEIN ... 357

THE MADRAS
Medical College Magazine

VOL. XV

JULY 1936

No. 4

**Some Principles in the Treatment
of Leprosy.**

By

CAPT. S. THAMBIAH, M.C., M.R.C.P., D.T.M. & H., F.D.S.

Even with drugs of reputed value, satisfactory results could not be achieved if their limitations are not borne in mind. Some of the principles regulating treatment and drugs are treated below, under different headings for purposes of clearness.

Diagnosis.—This must be placed in an unequivocal basis. Much difficulty will be experienced in early neural cases with one or two depigmented patches. The patches may have all the sensations—tactile, thermal and pain, normal on examination and sometimes it may be hypersensitive. In doubtful cases, the patient may be examined once a month or once in two months before deciding the case as one of leprosy. It will usually be found that on re-examination later, the patch has peripherally extended and some parts, especially the central, are anaesthetic. I have very often seen patches, which appear normal to light touch and painful sensation, where the thermal sensation is entirely wanting or the response is appreciably delayed. Unless there are valid reasons, clinically or otherwise, diagnosis of leprosy should not be made, as this entails much hardship and perturbation to the patient. When the diagnosis is clear, the patient must be assured by the doctor regarding his condition and what he may reasonably expect from a regular treatment. In cutaneous cases, skin clippings may be dis-

pensed with, as the resulting wound takes long in healing from want of proper nerve supply; and therefore puncture fluid from nodules used to make a "thick drop" preparation. When air-dried it can be dehaemoglobinized and then stained by the Ziehl-Neelsen method but the methylene blue-sulphuric acid must be diluted with an equal quantity of distilled water.

General measures.—It has been noted by many that this disease greatly ameliorates when the patient is placed in better surroundings and on nutritious diet. Surface injection of skin should be warded against by regular baths. Ample hours of sleep secured; eight to ten hours per day should be enjoined. Exercise short of fatigue may be permitted. When the sun is not hot, the patient should be in the open air as much as possible. It is a mistake to permit patients to rub in Chaulmoogra oil before bath when the skin is already generally erythematous and oedematous as in diffused cutaneous type of advanced cases. It is an advantage in all other cases.

Other complicating diseases.—A thorough general medical examination should be made, and all complicating diseases treated by appropriate measures so that the patient may be in a position to develop better resistance in fighting his disease. Ankylostomiasis, malaria and dysenteries will often be detected in these examinations.

As the modern treatment is mostly by injections, every effort should be made to deal with such skin infections as impetigo, scabies and fungus. Want of proper cleanliness and absence of the protective sensation in the skin area (anaesthetic) make this liability greater. I have often traced abscess formation at the site of injection as having arisen from an impetiginised skin affection being overlooked. In the treatment of these skin infections, it may be noted in passing, external application of weak strength have to be ordered.

Injection sites.—Arms, glutei and outer side of lower third of thighs may be used. Three points may be selected in each

of these sites, for injections, so much so, one need not return to the same point before the end of the tenth week, granting that the patient is injected twice a week. By this time, the previous points of injections will be perfectly normal and the subsequent points of injections may be half to one inch or more away from the former points. Rapid absorption also will result.

In the case of subcutaneous and intramuscular injection, I consider quantities over 3 c.c. at a time cause much discomfort and delay in absorption; if it lands on a recently injected site it may result in abscess formation.

The site of last injections should be carefully examined for inflammatory swelling, want of absorption, etc., and inquiry made from the patient as to general reaction in the form of malaise, headache, fever, etc. If there has been a strong reaction as indicated by fever lasting more than six hours or the local inflammation at the site of last injection, it is very much better to skip off one injection than give a smaller dose, which may be put off for a subsequent occasion. In this examination, a general inspection of the patient may be made to detect early manifestation of a "lepra-reaction".

Intravenous preparations are advantageous as local pain and discomfort of the subcutaneous and intramuscular injections are done away with. Limitation will be found in a small percentage of cases with myxoedematous appearance. Even in these, suitable veins can be found if sufficient time be given.

Choice of preparation.—That one preparation gives better results in neural cases than in cutaneous ones is rather a contention very difficult to prove. Further patients, to all appearances externally, who have similar lesions show varying response to the same type of treatment. Patient who can comfortably ingest increasing doses of the oil invariably showed rapid progress with amelioration of their lesions. Gastroenteritis limited the long continuance of the oral administration.

Still a reduced dosage of the oil may form an adjuvant to the injection treatment. The entire oil in a colloidal suspension has been on the market in varying percentages (Anglo-French Drug Co.) and can be administered with less discomfort and greater therapeutic effect as the entire oil is used in the colloidal suspension.

When a patient's progress becomes stationary under one treatment, another preparation should be tried. If ethyl esters are unsatisfactory, alepol may be tried and *vice versa*, or for that matter any other preparation. We have also had satisfactory result with Cresoted oil for injections but presence of pain is a big factor to reckon with.

Protein shock, gold preparations, pot iodide, sod. morrhuate and a host of other preparations advocated may be judiciously used for a change in refractory cases.

Small doses of non-specific protein may be used intramuscularly to start with so that the patient's reaction may be well gauged with a view to increase or decrease of dosage at a subsequent period. Very often with milk and aolan, $\frac{1}{4}$ to $\frac{1}{2}$ c.c. may be a fair dosage. If much reaction sets in, the same dose may be repeated after a week.

Calcium.—In this disease it has been definitely proved that a large percentage of leper patients show a calcium deficiency. Colloidal calcium, calcium gluconate, etc., may be given by any route twice or thrice a week. Calcium has a definite place in the treatment of general erythema of the skin, and neuritis. In the former case capillary constriction is produced and erythema bettered. In the case of neuritis it acts as a sedative to the neuro-muscular junctional tissue and thus relieves pain.

Weights.—Every leper patient undergoing active treatment should be weighed regularly once a month and this weight recorded in his card. Fatty acid derivatives produce an

enhanced metabolic rate and so a slight reduction in weight is to be expected. If, in spite of this, the patient maintains his weight level or increases in weight, there is no cause for interruption of treatment. Rapid loss of weight while under treatment will call for stoppage of injections and the patient should be allowed a more enhanced diet and rest. Sedimentation test is at best a test for debility and will not be a more satisfactory guide than the regular recording of weight.

COMPLICATIONS CONNECTED WITH THE DISEASE.

(a) *Lepra-reaction.*—The treatment with mercurochrome, sod. antimony tartrate, etc., leave much to be desired. Rest and bland diet should be insisted on. We have used 5 to 8 units of insulin daily with satisfactory results in three cases. Insulin increases the appetite and helps the storage of sugar in the liver and this in its turn profits all the other liver functions. The patient is given 10 to 20 c.c. of a 10 per cent glucose intravenously and also $\frac{1}{2}$ to 1 ounce by mouth in dilute form. Insulin is administered subcutaneously 20 to 30 minutes later. When more than 5 units of insulin have to be given, a larger dose is given in the forenoon and the smaller one later in the afternoon. This will obviate untoward hypoglycaemic reaction occurring at night.

(b) *Neuritis.*—This will generally yield as specific treatment by chaulmoogra derivatives proceeds. Ephedrine ($\frac{1}{8}$ rd to $\frac{1}{2}$ grain b. d. or t. d.) may be administered orally till pain is relieved. Salicylates, aspirin and other allied drugs are all useful. Novalgin (Bayer) orally or intravenously will give good results in refractory cases.

(c) *Depigmented patches and nodules.*—Under specific treatment, satisfactory progress will be attained. From an aesthetic point of view, intra-dermal infiltration by plancha method or trichlor acetic acid paint may be used. Large nodules will require the use of pure trichlor acetic acid.

(d) *Perforating ulcer*.—The treatment of this condition is very unsatisfactory. Rest is an important factor and will remove pressure which, to a certain extent, keeps the ulcer from healing. The ulcer should be kept clean by frequent change of dressing. Periarterial sympathectomy, though much commended, has not been such a success in practice. Removal of dead bone in the bottom of the ulcer certainly assists healing.

(e) *Eye complications*.—Though some of the gold preparations may stave off the final result, yet the inevitable end does certainly follow—destruction of the eye.

The Treatment of Diabetes Mellitus.

By

DR. K. C. PAUL, M.D.

*Physician-in-charge, Diabetic Clinic, (Out-patient Department),
General Hospital, Madras.*

1. In the latest (1935) edition of his monograph, *The Treatment of Diabetes Mellitus*, JOSLIN has stated: "Diabetes in and of itself is no longer fatal, and the diabetic has almost ceased to die of his disease." But in 1907 SANUDBY wrote: "Diabetes is in all cases a grave disease, and the subjects are regarded by all assurance companies as uninsurable lives: life seems to hang by a thread, a thread often cut by a very trifling accident." It is apparent, therefore, that the outlook for the diabetic has improved considerably at the present day. This improved outlook is the outcome of the therapeutic advances of recent years.

Modern diabetic therapy is of very recent origin; but already it has been fruitful of highly favourable results. It has enabled the victims of diabetes to live longer than formerly and to lead healthier and fuller lives. It is, however, in no sense curative therapy, being only corrective and substitution therapy. Its aim is to prevent or annul any and all disability arising as a result of diabetes. This aim it has achieved, and with no scant measure of success.

2. A brief survey of the development of diabetic therapy reveals that it has closely followed the trend of thought that has prevailed from time to time regarding the nature and origin of the disease. It need not surprise us that till recently the treatment was empiric and inadequate; for, true perception of the nature of the malady occurred only in recent times. An almost indiscriminate use of drugs prevailed till the correct principles of treatment were appreciated nearly two decades

ago. But at the present day it is recognized that drugs find no place in the treatment of diabetes.

In ancient times, when the nature of the disease was unknown, drugs were the main stay of treatment. The physicians of Ancient India, whose therapeutic acumen was of no mean order, imposed dietetic restrictions, but they placed reliance mainly on such medicaments as **abhrakabhasmam** (a preparation of mica) and **vasanthasukumaram** (a drug compounded from many mineral and vegetable substances), on decoctions of the seeds of jambul, and on certain herbs. The dietetic regimen they advised was the use of wheat in place of rice without restriction as to quantity. They enjoined physical exercise as a valuable adjunct to the other measures; and for this they deserve praise as it is really sound therapeutic advice. The gifted Arabian physician, **AVICENNA**, treated the disease with theriak (probably opium), musk, belladonna, and such other substances. There was no dietetic restrictions in his therapeutic scheme or in those of the physicians of Europe.

Glimmerings of the correct principles of treatment became evident only towards the end of the eighteenth century. **ROLLO** in 1798 recorded considerable benefit accruing to diabetic patients from a diet which was almost wholly composed of meat and animal fat; he insisted that rigid exclusion of carbohydrates from the diet was of paramount importance in the successful treatment of the malady. The Rollo regimen was in general vogue for some time, but it was soon found that the addition of green vegetables, poor in carbohydrate, to the dietary made it more acceptable to the patients without materially impairing its usefulness. Credit for the use of green vegetables, boiled in two or three changes of water, to free them of their carbohydrate content, belongs to the eminent French clinician, **BOUCHARDAT**, who deserves credit also for being the first among Western Physicians to recognize the value of physical exercise in the management of diabetic patients. **BOUCHARDAT** told his

patients who asked for bread, "You shall earn your bread by the sweat of your brow." It is a matter for regret that our physicians do not give this advice to their patients often enough.

Dietary regulation became accepted as a valuable measure for the control of diabetes in the nineteenth century. The use of drugs did not, however, abate, and many new drugs crept into usage. The list of drugs in common use during the second half of the nineteenth century included among others opium, codeine, belladonna, salicylate of soda, iodide of potassium, arsenic, egg-shell power, strontium bromide, carbonate of soda, carbonate of lithium, preparations of jambul, quinine, salicin, and uranium nitrate. The dietary restrictions advocated by some physicians were such that the patients at times had to be kept behind iron bars to prevent them from obtaining food by stealth. One such physician was **CANTANI**, who was probably the first, the physicians of Ancient India apart, to suggest that diabetes resulted from over-indulgence in food rich in carbohydrates. Be it noted further that the restrictions which were imposed affected only the carbohydrate moiety of the food. This latter criticism applies equally to the dietetic scheme of **KULZ**, who was the first to plan diets for each patient individually, after careful investigation of the carbohydrate tolerance.

Therapeutic advance of a different order came from **NAUNYAN** and his pupils, advocates of carbohydrate-free diets, whose work on acidosis and coma paved the way for the rational treatment of these conditions. They introduced the administration of alkalies in the treatment of diabetic acidosis and coma. But their claim for special recognition rests on the accidental discovery that total extirpation of the pancreas invariably results in diabetes which two of them, **VON MERING** and **MINKOWSKI**, made in 1889. This discovery was the starting point for the investigations which culminated in the isolation of insulin in 1922. It also provoked the many unsuccessful attempts at the treatment of diabetes by extracts of the pancreas.

The opening years of the twentieth century saw the introduction of the famous **oat cure** by VON NOORDEN. The oat cure was a definite advance on all previous therapeutic measures. The principle underlying it was that of under-nutrition, a fact which VON NOORDEN had not appreciated at the time he introduced it. Attention was sharply drawn to the principle of under-nutrition when GUELPA in 1911 started his fasting cure of diabetes. The fasting cure was, however, too drastic a measure, and did not find favour in the eyes of most patients. VON NOORDEN had, in his oat cure, employed occasional fast days, which he called metabolic Sundays, and noted beneficial results.

The principle of undernutrition was experimentally worked out and made clinically available by ALLEN in 1915. He demonstrated clearly that restriction of not only carbohydrates but also proteins and fats was essential in the therapeutic dieting of diabetes. The clinical results he obtained were far superior to any that had till then been possible. Abolition of glycosuria and ketonuria was obtainable even in severe cases of the disease. Owing to the Great European War, general dissemination of this advance in therapeutic knowledge did not occur till about 1919. In the meantime, GRAHAM had independently established the principle of undernutrition as the basis of diabetic therapy, and introduced the *ladder diets* which are even now in common use.

Experience had taught that withdrawal of all carbohydrate from the dietary was dangerous and caused ketosis. It was known for a long time that "fat burns in the flame of carbohydrate, but without it, it smokes." The recent studies of SHAFFER have indicated in what proportions fat and carbohydrate should be present in the dietary in order that ketosis might not arise. WOODYATT has given a formula which has been employed considerably for working out these proportions in the actual dieting of diabetic patients.

The year 1922 brought with it the long-hoped-for discovery of the pancreatic hormone, **insulin**. This discovery which we owe

to BANTING and BEST, revolutionized the trend of thought in diabetic therapy. The high hopes entertained in certain circles that insulin would be curative of diabetes did not materialize; but it soon became established that this hormone was the most potent anti-diabetic agent available. At an early stage of the investigations set afoot consequent on the isolation of insulin, it was realized that insulin therapy was substitution therapy and that it would yield the best results in conjunction with dietary regulation. This realization was helpful in preventing the indiscriminate employment of insulin in diabetes.

* * *

3. Modern therapeutics recognizes that diabetes is a metabolic disorder due to insulin deficiency, that though it is primarily a disorder affecting carbohydrate metabolism, protein and fat metabolism also become involved in the process, and that the deficiency in insulin which is responsible for the disorder becomes aggravated by anything that throws strain on the islets of Langerhans of the pancreas. It recognizes also that the diabetic organism has much the same needs as regards energy expenditure as the normal organism, and that the diabetic organism behaves in practically the same manner as the healthy organism when the insulin deficiency is made good or allowed for. There is also one other fact it takes into account, namely, that the healthy adult ordinarily consumes more food than is strictly necessary for him. Modern diabetic therapy has been built up with the above as the guiding principles. And it is because of the application of these in practice that the improvement in outlook now claimed for the diabetic has resulted. Though the general rule, "Once a diabetic, always a diabetic," holds good for all practical purposes, the results obtained thus far seem to bear the promise that diabetes may even be recovered from if treatment on modern lines is continued long enough.

4. It has been pointed out that the aim of treatment in diabetes is to prevent or annul any and all disability arising

from the disease. This aim can be met by adhering to certain well-established principles which may be summarized as follows:

(i) Normal values for blood sugar are the best, and in the diabetic an approach to the normal should be insisted upon; that is, the blood sugar when fasting should be within the normal limits of 0.08 per cent. and 0.12 per cent. and should not after meals rise above 0.18 per cent. The normal for urine, that is, absence of sugar, will result when this is achieved (except when the renal threshold for sugar is placed at a very low level).

(ii) Ketosis is abnormal and should be prevented or abolished; at no time should the urine contain any ketone. This can be ensured by keeping the ketogenic antiketogenic ratio in the diet below 1.5.

(iii) The diabetic has but little reserve to utilize carbohydrate, and this should never be overtaxed: the damaged or defective islets of Langerhans should be spared functional overstrain so that they may not suffer further injury. ALLEN has shown that the islets of Langerhans become further damaged if the diet is not strictly limited in carbohydrates, fats, and protein.

(iv) The metabolic functions are best performed when the general health is good; to ensure this the patient should take exercise and regulate his habits. Exercise promotes the utilization of sugar, and should therefore be insisted on wherever possible.

In putting the above principles into practice, the following maxims taken from the Diabetic Creed of JOSLIN will prove helpful:

"Normal weight or less should be insisted upon in each diabetic.....but therapeutic loss of weight should be extremely gradual.

"Mildness of the diabetes should be assumed, a long life should be expected, and the patient (should) be treated accordingly. Hence, the nearer the proportions of carbohydrate, protein, and fat in the diabetic diet conform to those of the normal diet, always seeking to avoid glycosuria and hyperglycæmia, the better it will be for the patient, even at the sacrifice of weight, though not of strength. A carbohydrate tolerance, unutilized, retrogrades.

"Reversal of the diet, namely high-fat and low-carbohydrate, assumes the contrary, severity of the diabetes, and is dangerous both in principle and in practice and unless accompanied by a minimum protein intake frequently ends in coma.

"Undernutrition (a) prevents diabetes and (b) is the foundation-stone of diabetic treatment, but if hunger can be avoided a smaller number of patients will yield to temptation, break treatment, and in consequence die of coma.

"Extreme inanition with loss of body protein is not worth while simply to render the blood sugar normal.

"Firm persistence in a strict diabetic diet (a) finds ample justification in the patients kept alive by it to profit by insulin; and (b) is essential to safety and success in the use of insulin. Insulin utilizes rather than replaces the advances in diabetic treatment hitherto achieved."

All the principles stated above are embodied in the modern treatment of diabetes, which consists in—

- (1) Dietary Regulation;
- (2) Administration of insulin;
- and (3) General Hygienic Management.

It should be mentioned also that a prime requisite for achieving success is the co-operation of the patient, which will be forthcoming only if he is given a proper Diabetic Education.

5. It is generally admitted that in every diabetic the urine should be made sugar-free and the blood the sugar normal. As JOSLIN says, "The urine is to be made sugar-free and the blood sugar normal: (1) because normal values are obviously the best; (2) because a high blood sugar is a stimulus for insulin secretion and the impaired island tissue should be spared overwork; (3) because the removal of the glycosuria proves utilization of the diet." It has been amply demonstrated in recent years that it is a comparatively simple task to render the urine of a diabetic sugar-free and his blood sugar normal. Place him on a sub-basal diet of low carbohydrate content for a few days and glycosuria will usually disappear. If it persists, reduce the diet further, and the desired result will be forthcoming. A preliminary fast will accelerate the disappearance of the sugar from the urine. The same measures will also bring the blood sugar down and keep it within normal limits. It is not, however, freedom from hyperglycæmia and glycosuria on a sub-basal diet that the therapist aims at. He seeks to maintain his patient in a state of health and comfort, without loss of strength, and without hyperglycæmia and glycosuria. On a sub-basal diet the patient will lose flesh, his strength will diminish, and he will be unable to do his usual round of duties. The task of the physician is, therefore, to ensure freedom from hyperglycæmia and glycosuria when the patient is on maintenance diet, that is, a diet yielding sufficient energy to maintain him in health and with undiminished strength. Some diabetics remain free from hyperglycæmia and glycosuria when on maintenance diet; they are those suffering from a mild type of the disease. The management of such diabetics is usually an easy matter. The greatest difficulty the physician encounters in dealing with them is to teach them the necessity for not overstepping the limits of the dietary prescribed for them. Many diabetics, however, continue to be hyperglycæmic and glycosuric even on the basal diet. Such diabetics never attain freedom from hyperglycæmia and glycosuria except on a sub-basal diet. Other diabetics there are, in whom hyperglycæmia and

glycosuria will be absent when they are on the basal or a sub-maintenance diet, but will be present when on maintenance diet. In dealing with both these groups of patients the physician should employ insulin in order that freedom from hyperglycæmia and glycosuria will be ensured when they are on maintenance diet. It is essential that every diabetic should receive the diet that would, if fully utilized, suffice for his metabolic needs, that is, the maintenance diet, and it is equally essential that in every diabetic full utilization of the diet he receives should occur. It is requisite, therefore, that the diabetic who cannot utilize fully the diet needed for maintenance should be helped by the administration of insulin. But insulin should be made use of only when the maintenance diet is not fully utilized. The maintenance diet is a restricted diet and is so constructed that while it suffices for the energy needs of the individual it taxes the functional activity of the islets of Langerhans as little as possible. Any diet in excess of the maintenance diet will put the islets to greater strain. Therefore, it is imperative that where carbohydrate utilization is limited the diet should never be in excess of the maintenance diet. But this does not mean that diabetics who can fully utilize a diet in excess of the maintenance diet should not take all the diet they can utilize. The contention is that no diabetic should take a diet in excess of the maintenance diet unless he can utilize it fully without the use of insulin; in other words, insulin should not, as a rule, be employed for enabling a diabetic to make use of a diet in excess of the maintenance diet. It may be pointed out also that physical exercise may improve the utilization of the diet to even the full extent in some selected cases, and that recourse should be had to physical exercise as a therapeutic measure whenever possible before deciding on the employment of insulin. But insulin should not be denied to any patient, if circumstances permit, in whom for the utilization of the diet required it is necessary. Particular attention should be paid in this connec-

tion to juvenile diabetics. In juvenile diabetics, the diet should be such as would permit normal growth to occur; but few juvenile diabetics will be free from hyperglycæmia and glycosuria on such a diet; in them full utilization of the diet proper to them will result only when insulin is given. Insulin will have to be given to diabetics in certain other circumstances. When a diabetic, who ordinarily remains free from hyperglycæmia and glycosuria on the maintenance diet, suffers from an acute infectious disease or is subjected to toxic influences or trauma, he is apt to become hyperglycæmic and glycosuric; in such circumstances, his blood sugar should be kept within normal limits and his urine free from sugar till he recovers from the intercurrent malady, when usually he will continue to be free from hyperglycæmia and glycosuria on the diet he is allowed. Again, when a diabetic shows evidence of dangerous acidosis, or is threatened with coma, or is in actual coma, he should at the earliest possible moment, be brought under the influence of insulin; to withhold insulin even for a brief while may here determine an untoward termination. But, taken all in all, the cardinal principle remains, that an effort should be made, in every instance, where circumstances permit to establish freedom from hyperglycæmia and glycosuria without enfeebling the patient by adjustment on the diet; resort should be made to insulin only when dietary regulation fails to secure the results desired.

A CASE OF DIABETES MELLITUS TREATED BY DIETARY REGULATION*

THE USE OF HIGH CARBOHYDRATE DIET IN THE TREATMENT OF DIABETES MELLITUS

P. C. S.... Indian Christian, male, aged 46 years, came under observation for weakness of 8 months' duration on 7-5-1933. His urine had been examined in September 1932

* This report was presented before a Clinical Meeting of the South Indian Branch of the British Medical Association held in December 1934.

and sugar found therein. Since November 1932 he has been becoming progressively weaker and losing weight. He had neither polyuria nor thirst at any time. There is an antecedent history of alcoholic indulgence and of carbohydrate excess; but no history of venereal disease. There is no history of hereditary diabetes.

On examination, weight 110 lbs., and height 5 ft. 4½ in. No abnormal signs were detected in the circulatory, respiratory, and nervous systems. Slight pyorrhoea alveolaris present; one lower incisor tooth shaky. Liver and spleen not enlarged. Blood pressure in sitting posture: Systolic, 115 mm. of Hg.; Diastolic, 65 mm. of Hg. Urine contained 25 per cent. sugar, no albumin, and no ketones.

Dextrose tolerance test was done (at the Biochemical Laboratory of the Madras Medical College) on 22-5-1933. The following is the report of the Biochemist:

Blood sugar before glucose (fasting)	0.125 per cent.
„ 30 min. after 50 gm. glucose	0.165 per cent.
„ 60 min. „	0.224 per cent.
„ 90 min. „	0.252 per cent.
„ 120 min. „	0.234 per cent.

That patient was prescribed a diet containing approximately 113 grammes of Carbohydrate, 48 grammes of Protein, and 83 grammes of Fats, and yielding about 1530 calories of energy (See Diet sheet appended below).

He was advised to take also the Mistura Ferri et Strychninae of the General Hospital Pharmacopoeia, one ounce thrice daily, after food; and he was sent to the Dental Department where his pyorrhoea alveolaris was treated.

He was under continuous observation at the Diabetic Clinic of the General Hospital since the stabilization of the diet

on 25-5-'33. Except on one occasion when he had a severe cold there was no return of sugar in the urine which had disappeared within a week of his being placed on this diet. He has adhered to the diet as carefully as *he could*, observing a fast one day each fortnight. His general health was good till July 1934, when had an attack of dysentery. His weight on 12-7-'34 was 106 lbs., 4 lbs. less than when he first came under observation.

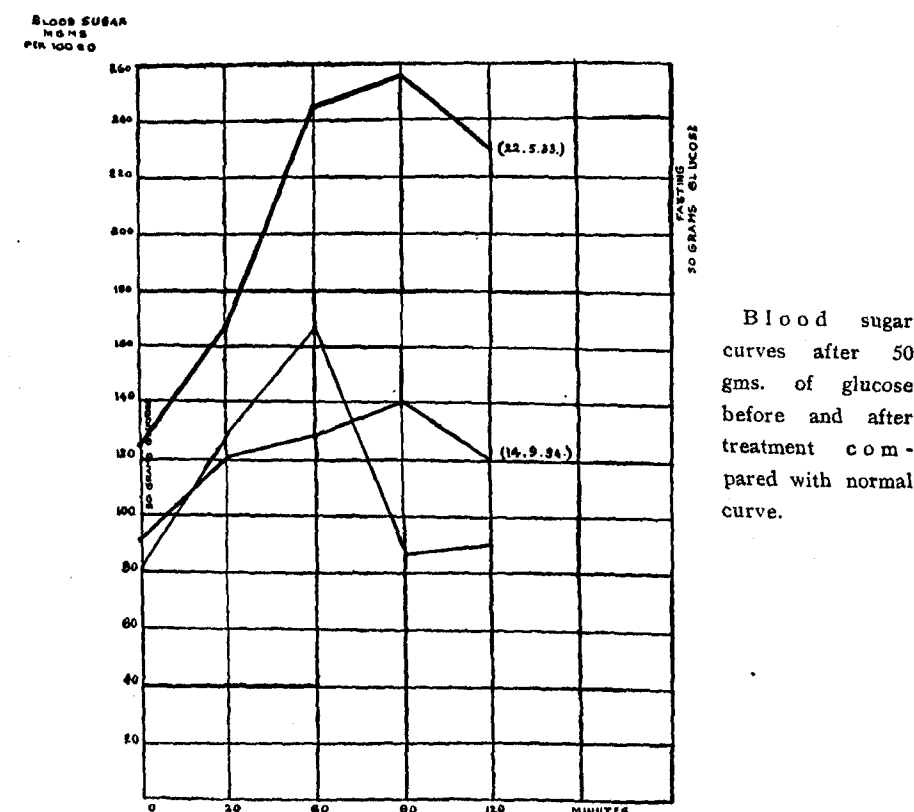
The *dextrose tolerance test* was repeated on 14-9-1934. The report of the Biochemist is as follows:—

Blood sugar before glucose (fasting)	0.09 per cent.
„ 30 min. after 50 gm. glucose	0.12 per cent.
„ 60 min. „	0.125 per cent.
„ 90 min. „	0.14 per cent.
„ 120 min. „	0.12 per cent.

This shows a marked improvement in tolerance to dextrose since the original test was done on 22-5-1933. (See chart).

This case illustrates the remarkably good results that could be obtained in diabetes mellitus with dietary regulation. A very important point to note is the high carbohydrate content of the diet. In the United States of America and in Great Britain high carbohydrate diets are in use, but are of comparatively recent introduction; and, further, such diets are used in combination with Insulin. I have been making use of high carbohydrate, low fat, diets in the treatment of most of my cases of diabetes mellitus since 1929. The results I have obtained with such diets are highly satisfactory. In a certain proportion of cases the employment of INSULIN for varying

periods has been necessary, but in the majority dietary regulation by itself kept the disease under control.



DIET PRESCRIPTION FOR P. C. S... .. Male. 46 years.

BREAKFAST

Oatmeal	$\frac{1}{2}$ oz.	made into porridge (and taken with milk 5 oz.)
Eggs	2	half-boiled
Tea or Coffee	one cupful	with milk 2 oz.
Milk	7 oz.	5 oz. with porridge 2 oz. with tea or coffee

C. 20 P. 20 F. 19

LUNCH

Rice	1½ oz.	well cooked	
Ghee	½ oz.	with rice	
Mutton or Beef	1½ oz.	prepared as desired	
or			
Fish	2½ oz.	prepared as desired	
Vegetables			
Brinjal, 6 oz.			
Cabbage, 6 oz.			
French Beans, 6 oz.			
Snake Gourd, 6 oz.			
Tomatoes, 6 oz.			
Bendakkai, 4 oz.			
Pavakkai, 4 oz.			
Greens (keerai), 8 oz.			
Banana stem, 8 oz.			
		any three for the meal prepared as desired	† smaller quantities than allowed only were used.
Onions	2 oz.	to be used as desired.	
Curds	5 oz.	to be used as desired.	
		C. 64 P. 21 F. 30	

TEA

Tea or Coffee	one cupful	with milk 2 oz.	
Milk	2 oz.	with tea or coffee.	
		C. 3 P. 2 F. 2	

DINNER

Rice	1½ oz.	well cooked	
Ghee	½ oz.	with rice	
Vegetables	any three	for the meal prepared as desired	† smaller quantities than allowed only were used.
Onions	2 oz.	to be used as desired	
Rasam	q. s.	prepared without dhal	
		C. 56 P. 5 F. 17	
Fat allowed for cooking	½ oz.		F. 15
Total		C. 143 P. 48 F. 83	
		Calories = 1530	

† the amount of carbohydrate taken daily is probably 10 grammes less than that stated.

The Bed Bug.

By

S. F. A.

The bed-bug finds a place under the verminous affections of our body, along with fleas, lice, etc. Unless we are thoroughly troubled by them, we take no notice of them; those who have been able to acclimatise themselves to their presence in their beds just forget them in the morning unless their attack is a massed one and the habitual occupant of the bed was away for a few days on a holiday and returned. Most of us have no use for the bug; it is only a nuisance. To the students who are good sleepers it is a good friend at the verge of the examinations. He will be up early and at his books. Our readers in particular cannot bring home to the bed-bug any disease in which it plays the role of transmitting agent. During the time of Col. Donovan, at least in Madras, the bed-bug was to the fore and incriminated as the transmitter of K. A. by Major Paton and others. Then the Reduviid Bug (*Conorhinus megistus*) took its place and was later abandoned. Then the sand-fly (*Phlebotomus argentipes*) took its turn on the main ground of its geographical distribution coinciding with the distribution of K. A. Thus the bed-bug becomes handy to research workers as a transmitting agent till something definite is found elsewhere. No one at the present moment believes in its transmission of Leprosy.

Life History.—Some of the salient points in the life history of the bed-bug should be understood before an efficient control can be worked out. Most of us, or in fact all of us, are familiar with *Cimex rotundatus*—the Indian bed bug. As described in most books, it neither bites nor sucks. The beak is adapted for piercing the skin and the blood ascends by capillarity and not by suction. The female lays about fifty eggs (c f. *Pediculus capitis*) and these hatch out after a week to ten days. The larvae are transparent and elude detection. After several moults, adult stage is reached in two to three months. The average age of the bed-bug is about a year. Blood, human or

other mammalian, is its main subsistence: when not within reach, it may subsist on dirt, mud, etc. It is able to starve for long periods, and can also travel from house to house. They live in the crevices and cracks of all the public conveyances; beds and cane-chairs are much preferred as they can be near their hosts. They bite by night and by break of day get into their hiding places. Holes in the walls are usually full of them in an infected house. Mats—reeds, bamboo, palmyra and cane afford a good protection. The Madras Tamil name *அட்டிப் பூச்சி* is perhaps derived from its predilection for joints in furniture; and the other shorter name *அட்டை*, refers to its peculiar habit of clinging to baggages, packs and luggages as a means of transport to new habitations. How often the infection is carried in our dresses (creases) unawares to an uninfected home. Hostels, boarding schools, boarding houses, hospitals, etc., have their periods of trouble and sometimes the bugs are always to be found.

Skin lesions.—Punctures produced by the bug give rise to Urticaria, as in the case of the mosquito bites, attended with itching or burning. The urtication lasts from 24 to 48 hours and subsides. Numerous 'bites' in a limited area may give rise to an oedematous patch. Daily repeated punctures may cause scratching and impetiginization: this is specially the case in boarding houses, ships and barracks. Any weak antiseptic ointment or a weak solution of liquor Ammonia will deal with the cases satisfactorily. This skin lesion produced by the bed-bug has been honoured by the name of 'Hemipteriasis.'

Control.—It is very difficult to eradicate the bed-bug from an infected place; success will depend on the thoroughness with which the Vermicide is applied. Shylock was prepared to spend 3,000 duckats when his "house was troubled with a rat and to have it baned". A funny story is told of another who was much in trouble through the bed-bugs. Finding an advertisement, "How to kill bugs effectively, write to.....(here the address of a firm in Europe was given). Send five shillings along with the letter", the sufferer wrote for advice and sent the postal order for the required amount. In due course, the post brought a small parcel and a letter. The former contained two small polished wooden slabs (square shaped) and the letter contained the laconic direction, "when the bugs bite, light the lamp, get hold of

the bugs, put them on one slab and squash them with the other". Comment is unnecessary, but it is the extreme trouble that made the man to write for advice. Perhaps, in crevices, etc., hand picking and destroying is more effective as regards stray ones.

Fumigation by cyanide vapour will require an apparatus and a trained technician and is fairly effective. All wood-works should be opened out and reapers or boards removed from beds, etc. Holes on walls, nooks and crevices where cynaide vapour may not be able to penetrate may be previously treated with advantage with kerosine, petrol, carbontetrachloride or a mixture of cresol and kerosine. Sulphur may be volatilised and the rooms kept closed for 6 to 8 hours, and then all doors and windows opened out to waft away the irritating sulphur fumes. Sulphur, though easily used and cheap, has its draw-backs. It blackens certain articles, tarnishes paints and some fabrics are bleached.

Mats will require destruction by fire; the bent-in edgings of these are laden with bugs, transparent larvae and eggs. Iron beds may be directly flamed and for this purpose a painter's type of Primus lamp with a side handle will be found useful. Most of the senior students attending the hospital have seen this method of "debugging" the iron cots in the wards. Wooden beds, cane-chairs and wooden chairs can be freed of bugs by using boiling water. Joints and crevices have to be filled with the boiling water by means of tins attached to a wooden handle. The servants should be supervised by a responsible person. Mattresses and pillows may be left out in the sun and require frequent change of position to get the sun.

Tanglefoot Corporation has introduced an apparatus, for volatilising Pyrethrum powder, in the form of an atomiser and it is really an advantage on all other methods.

A Case of Subacute Bacterial Endocarditis.

By

R. BALACHANDRAN THAMPI, M.B. & B.S.

Name.—Ramamoorthy Iyer. *Age.*—30.

Hindu. Male. Occupation.—Cook.

Admitted on 14-5-1936, for irregular fever with shivering, pain in the chest and joints.

Duration.—One month.

Previous health was good till the past two and a half years. There was no history of any attack of infectious diseases or any disease suggestive of rheumatic fever. Patient had no breathlessness on exertion or swelling of the extremities. He would admit no history of venereal diseases. He was not coming from malarial endemic area. There was nothing of importance in the family history. Patient was unmarried.

About two and a half years back patient had an attack of fever with rigor which lasted for a few days. The attack recurred some time later and after every rigor he had sweating. He was treated outside but with no relief. For the past one year he was experiencing dull pain in all the joints but had no swelling at any time. Though his general health was deteriorating he continued to work. His work as a cook demanded some physical strain which later made his condition worse. During the past one month he was unable to do work and so took to bed. The rigors occurred more often, sweating became more and more exhausting and for the last eight days he was experiencing transient pains over the praecordium with slight nocturnal breathlessness.

Bowels opened regularly, appetite was normal and he had sound sleep except on a few days.

A Case of Subacute Bacterial Endocarditis

291

There was haematuria on the day previous to the admission date.

Condition on admission.—Patient appeared a well nourished, healthy adult of a peculiar sallow complexion—*cafe-au-lait*—, rather euphoric. He was anaemic. Teeth were dirty, pyorrhoea alveolaris was present. Tongue was moist, flabby and uniformly coated. Throat was congested, both tonsils were enlarged. There was tendency to clubbing of the fingers, but no cyanosis.

Examination of the circulatory system revealed that the apex beat was visible and palpable in the 5th and 6th inter spaces in the left nipple line. It had a heaving character. There was no thrill. Boundaries of the heart were found to be: upper border, upper border of 3rd rib; right border, $\frac{1}{4}$ " external to the right lateral sternal line and the left border just external to the left nipple line in the 5th space. Percussion along the 2nd inter space showed slight enlargement of the aortic dullness. On auscultation a soft blowing murmur was heard replacing the second sound in the mitral area. In the aortic area there was a rough diastolic murmur which was conducted downwards along the sternum. The first sound in the aortic area was indistinct. In the pulmonary area a diastolic murmur was heard. Nothing special was noted in the tricuspid area.

Pulse was regular, rapid, of good volume and high tension. It was almost of a "water-hammer" type.

Capillary pulsation was not elicited. No pistol-shot sound or Durozeiz murmur was heard over the femoral vessels.

In the alimentary system excepting for the enlargement of spleen nothing special was noted. The spleen came down to 3 fingers breadth below the left costal margin, was soft and slightly tender. Liver was not palpable. There was nothing abnormal in the respiratory system.

Investigations carried out:

Examination of Urine:—	Highly coloured.
(14-5-1936)	Reaction acid.
	Sp. gravity 1018.
	Albumin Trace.
	Sugar Nil.

Microscopical examination of deposit.

R. B. C + ; W. B. C + ;
hyaline and a few blood casts present.

9-6-1936. Culture of catheterized specimen—Sterile.

Examination of Blood :—

(15-5-1936) R. B. C.	3.69	millions per c.m.m.
W. B. C.	13,100	per c.m.m.
Haemoglobin	72%	
Differential count—	Polymorphs	77%
	Lymphocytes	13%
	Monocytes	6%
	Eosinophiles	4%

Repeated examination of the blood film during the rigors failed to reveal any malarial parasite.

W. R. & Kahn :—Positive strong (repeatedly).

Blood culture (taken during rigor: for non-enteric group of organisms).

19-5-36	Sterile
20-5-36	do
27-5-36	do
9-6-36	do

Culture for B. Typhorus was also negative.

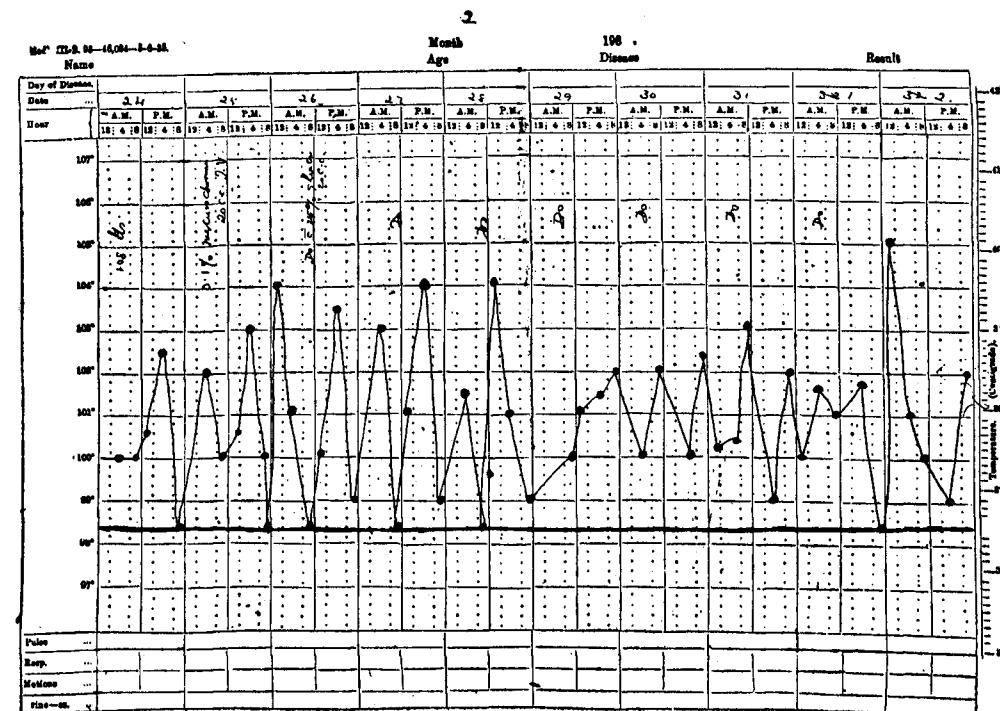
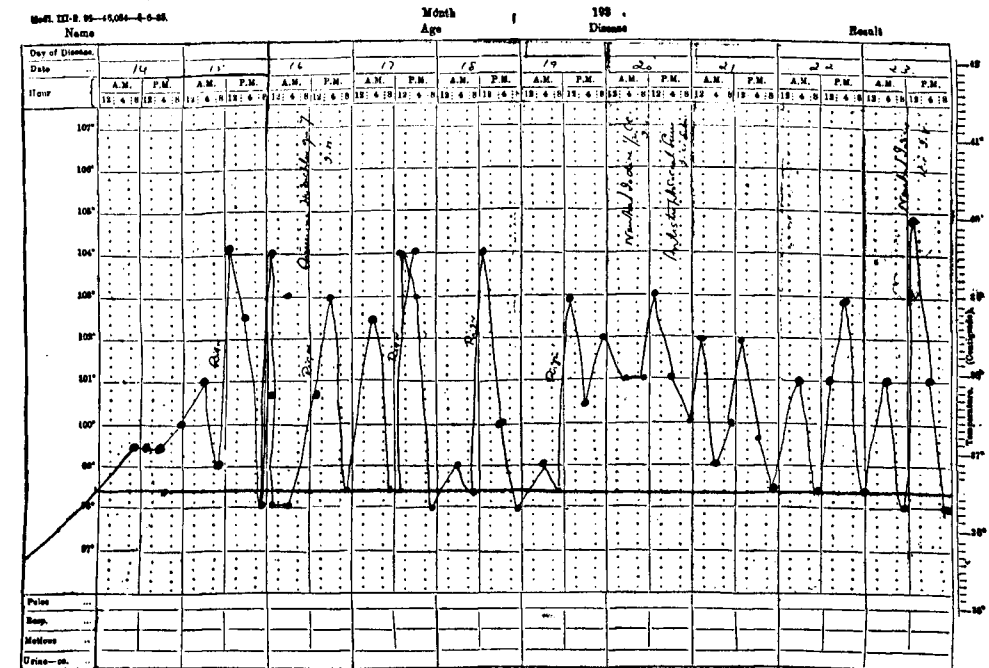
Repeated again after a few days on three consecutive days blood culture was found to be sterile. (Further cultures were not done as the patient refused to co-operate.)

Widal reaction—Negative for B. Typhosus and Para typhoid A, B, and C Agglutination for

B. Mellitensis	} All were negative.
„ Para Mellitensis	
& B. Abortus	

Gel and Chopha's tests.—Negative.

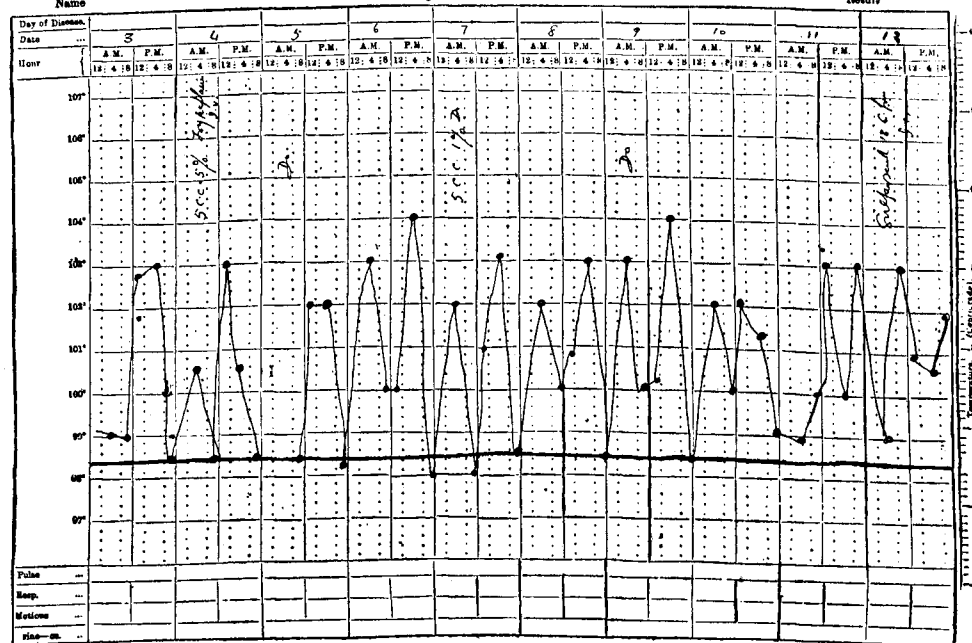
X-Ray of the chest (17-5-36) :—showed general enlargement of the heart shadow—Right hilum showed increased density.



Mod. III-B 96-44,001-1-6-58
Name

Month 3 196
Age Disease

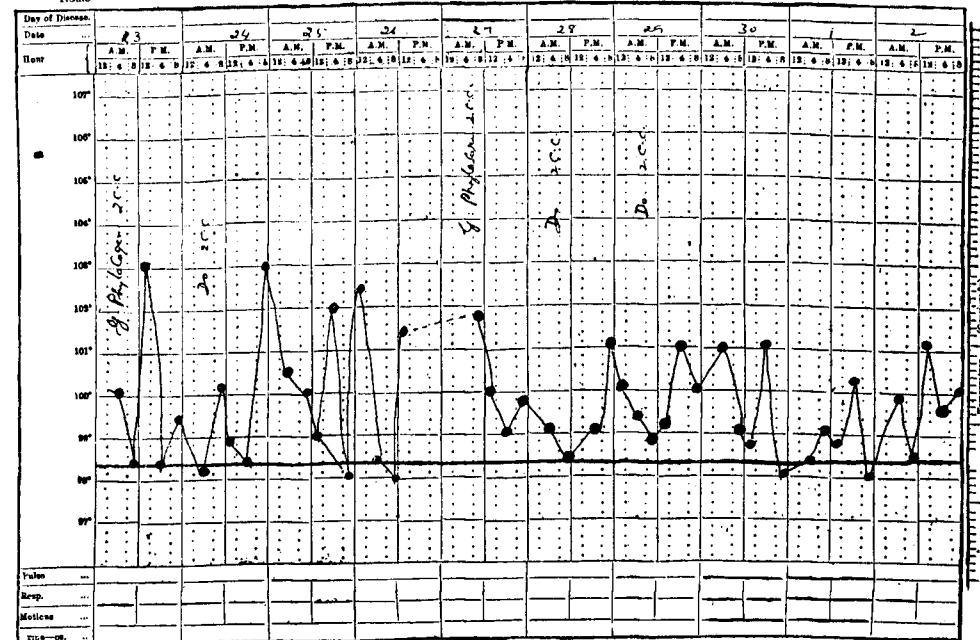
Result



Mod. III-B 96-44,001-1-6-58
Name

Month 5 196
Age Disease

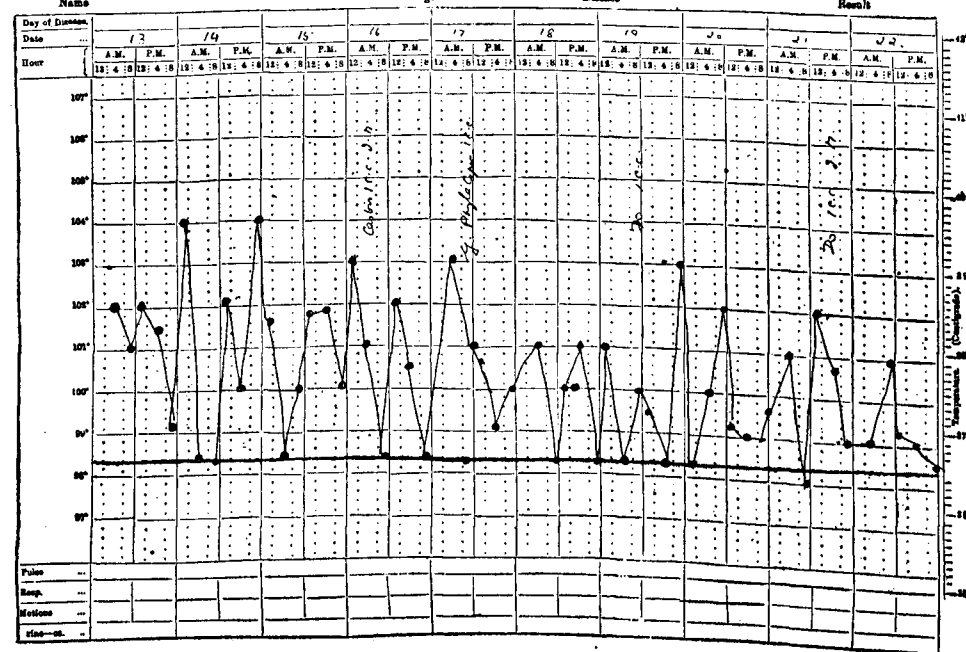
Result



Mod. III-B 96-44,001-1-6-58
Name

Month 4 196
Age Disease

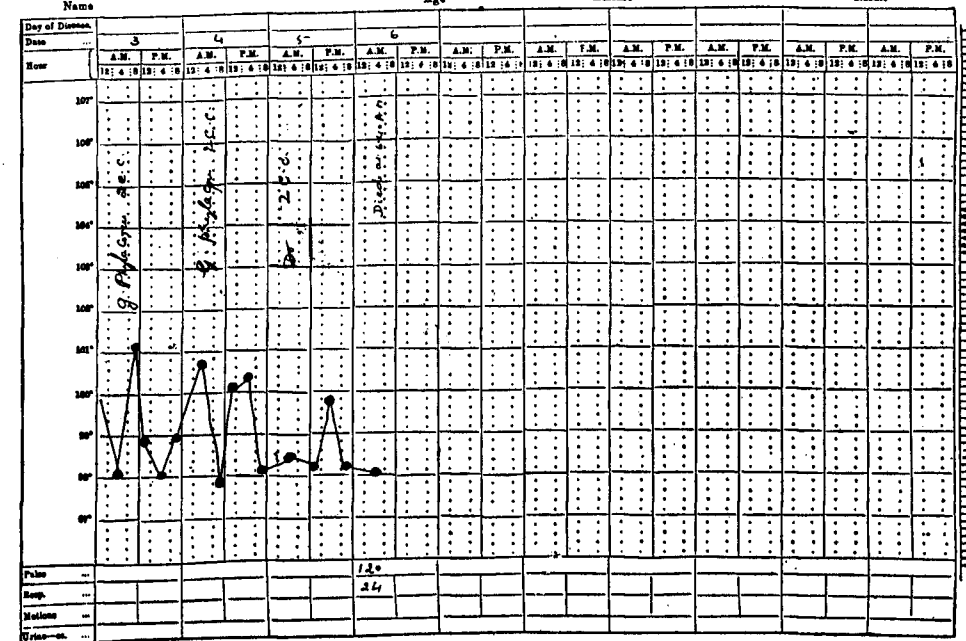
Result



Mod. III-B 96-44,001-1-6-58
Name

Month 6 196
Age Disease

Result



E. C. G. (17-5-36) :—Simple tachycardia
T wave + +0.

Blood Pressure (14-5-36) 110 Systolic. 40 Diastolic.

Towards the end (26-6-36) the blood pressure was found to be ; in the left arm 150 systolic and 30 diastolic ; while in the right arm it was only 115 systolic and 50 diastolic.

A pulse tracing was taken and it had the characters of the " water hammer " type of pulse. No petechiae were noticed by constricting the arm with the band of the Sphygmomanometer for 15 minutes.

Stained specimen of urethral smear was negative for Gonococci.

From the clinical data a provisional diagnosis of subacute bacterial endocarditis was made.

Treatment and Progress.—

14-5-36. On admission he was put on mixture quinine sulphate 3 i. T. D. Temperature was 104° F. He had a rigor and afterwards sweating. The urine was slightly blood tinted. Diet was chiefly restricted to nourishing fluids, oranges and biscuits.

One pint of Imperial drink was given per day.

16-5-36. 7 grs. of quinine acid hydrochloride in 10 cc. of sterile water was given intramuscularly.

Haematuria was stopped. No response was noted in the temperature [see temperature chart.]

18-5-36. A definite diastolic murmur was audible over the aortic area. No thrill was felt. General condition was unchanged.

19-5-36. The right radiocarpal joint was swollen and painful. Evaporating lotion was applied with a soothing effect.

20-5-36. A systolic murmur was heard over the mitral area which replaced the first sound completely. It was conducted outwards. The diastolic murmur in the aortic area persisted. Temperature was still intermittent, with 2—3 rigors per day.

Neutral Iodine 1 c.c. was given intravenously and 30 c.c. of Antistreptococcal serum intramuscularly. The temperature on the whole showed a slight tendency to fall till the 23rd (See temperature chart.)

23-5-36. Neutral Iodine 1 c.c. intravenously. Temperature again shot up to 105° F. The following mixture was prescribed instead of the previous one:—

R

Quinine Sulphate	grs. 12.
Acid nitro hydrochlor dil	m. 12.
Potas Citras	grs. 21.
Tr: Camphor Co.	m. 20.
Tr: Scillae	m. 3.
Salicin	grs. 12.
Aqua chloroform	3 ii.
Aqua	ad 3 vi.

F.M. 3 ss 4 hrly: P. C.

25-5-36. There was no improvement in the condition. Patient was started on 20 c.c. of 0.1 % Mercurochrome (Evan's 'Mercurocol') in 25% glucose solution intravenously.

The frequent rigors and sweating were weakening the patient much, yet he was optimistic.

29-5-36 to 1-6-36. The temperature showed a definite fall and the number of rigors were less per day. (Note the temperature chart). It was now of a remittent type, the maximum reached being 102°F. He began to complain of precordial pain and slight nocturnal dyspnoea.

Spleen was of the same size as on admission

2-6-36. Temperature again shot up to 105°F Intravenous Mercurochrome was stopped after 8 injections.

4-6-36 to 9-6-36. We started giving 5 c.c. of 0.5% Trypaflavine (Bayer) intravenously the dose gradually increased to 10 c.c. of 1% solution.

No effect was noticed on the temperature and this treatment too was given up after 5 injections. Clubbing of fingers was more marked

now. The aortic diastolic murmur was not well heard while the mitral systolic murmur became more prominent. The pulmonary second sound was accentuated. At night he had an attack of severe pain over the chest on the left side which he said was transient.

12-6-36. On the evidence of the strong positive Wassermann reaction a course of Sulfarsenol injections was started: 18 C. Grms weekly along with bi-weekly injections of 'Casbis' 1 c.c. intramuscularly.

No change was noted in the temperature. Pallor was more pronounced.

17-6-36. Patient said that he had a discharge per urethra but on examination he was found to have a small erosion on the glans penis near the external urethral meatus. The smear was examined and no gonococci were found

Any how Gonorrhoea Phylacogen(P. D.) was given intramuscularly 1 c.c. increased up to 2 c.c. on alternate days.

26-6-36. General condition was worse. Patient became more emaciated and markedly anæmic and he was found to be very much dejected mentally. The temperature was running at a lower range though he continued to have rigors and sweating. Dyspnoeiac attacks were more frequent. A systolic thrill was palpable in the mitral area. The aortic diastolic murmur was rather indistinct.

27-6-36. Patient was refusing to take feeds and he was occasionally delirious.

Gonorrhoea Phylacogen was kept up, 1 c.c. on alternate days. The temperature was gradually falling down and was remittent. Was this the effect of the drug or was the patient going downhill?

6-7-36. The general condition was progressively becoming worse.

In the morning the temperature was normal at 4 A.M. Patient took coffee from the nurse. His pulse was 120 and respiration 24 per minute. Suddenly he had an attack of fainting without any obvious change in him and before the nurse had time to come to his aid he died at 6-25 A.M.

Post-mortem notes :—(6-7-36 to 7-7-36).

The peritoneal cavity contained a pint of clear straw coloured fluid. Intestinal wall showed œdema. Both pleural cavities showed a small amount of clear straw coloured fluid.

Liver :—Enlarged and weighed 70 oz. Showed fatty change.

No gall stones were present.

Spleen was very much enlarged and weighed 19 oz. There was a partly red and partly white irregular infarct 2" x 3" on the anterior border at about its middle. It was wedge shaped in section with a zone of hyperæmia all round. The colour of the spleen was reddish brown and its consistency soft.

Heart was larger than normal and weighed 12 oz. Right side showed dilatation. On section a very friable whitish vegetation about the size of a marble was seen attached to the posterior wall of the left ventricle just at the level of the lower border of the posterior mitral cusp attached to one of the columnæ corneæ. Segments of the valves were normal.

Aorta.—Dilatation of the ascending part of the aorta was noted along with a few raised atheromatous patches in the descending part. There was no evidence of syphilitic disease of the aorta. The opening of the coronary arteries were not occluded. The aortic valves were fairly normal in appearance.

Kidneys.—Both were larger than normal. The right kidney showed a depressed scar near the lower pole at the outer border. Section showed an area of old infarct in the region of the depressed scar.

Brain.—Weighed 44 oz. Its appearance was fairly normal. There was no evidence of embolism or hæmorrhage.

A brief description of the disease and the various views about it may be useful now.

Subacute bacterial endocarditis or Endocarditis Lenta as some prefer to call it is a progressive bacterial inflammation of the endocardium with a tendency to run a prolonged course.

Osler, Horder, Libman and others are responsible for including this disease in a separate entity and according to them this is the most common type of endocarditis.

The disease is caused by a variety of streptococci (*Streptococcus viridans*) of the salivary or faecal group. These are short chained cocci and in biochemical reaction different from *S. pyogenes*. This explains probably the absence of suppuration in the embolic infarcts which is a feature of this disease. According to Von Glahn and Pappenheimer *Staphylococcus aureus* is occasionally found. The non-hæmolytic *Streptococcus* responsible for the disease grows poorly in culture.

The disease is more common in males, rare in the first decade and after the sixtieth year. All agree that physical strain, congenital malformations of the valves and previous valvular diseases are undoubtedly some of the predisposing factors. Associated with other valves the mitral valve was found affected in 76 per cent of cases while in 43 per cent of cases the mitral valve alone was involved. Next in series come the aortic valves. It is interesting to note that the pulmonary and tricuspid valves are usually spared. The vegetations that are formed are usually large friable and greenish in colour. Ulceration of the valvet seldom occurs. The vegetations may spread to the walls of the heart chambers, though the myocardium is untouched. The other important pathological finding is the result of embolism. The various sites where these emboli may be found are the spleen, kidney, lungs, vessels of the extremities, brain, skin, coronary arteries, parotid gland, mesenteric vessels, retina, para vertebral tissues, liver, abdominal veins, ovary, etc. The spleen and kidney are the commonest sites. Splenic infarct is said to occur 7 times more commonly than renal infarct in this condition. Once the infection is established in the endocardium a state of 'arterial pyæmia' results, the circulation being fed by micro-organisms from the infected area.

Though usually of an insidious onset, the first sign may be dramatic due to an embolism occurring in any vital part. Lassitude, loss of weight and progressive anaemia and vague pains in the joints are some of the earlier symptoms. To these may be added anorexia with or without nausea and later vomiting.

When well developed the clinical findings are characteristic and may be considered under different groups:—*viz.*, pyrexia, anaemia, enlargement of the spleen and other embolic phenomena, clubbing of fingers and local findings.

Pyrexia:—Usually this is of an intermittent type but some authors say that every conceivable type of temperature might occur in this condition. Though rigors are said to be uncommon, sweating is severe and frequent and exhausts the patient to a great extent. Cabot writes "When chills occur without any recognized cause such as malaria or a known septic focus, there are three places to look for the origin. (a) The biliary tract and gall bladder, (b) the genito urinary tract and (c) the heart"; while F. W. Price urges that "The heart should invariably be examined in cases of pyrexia of uncertain origin." In the final stages when the patient becomes more and more exhausted by the disease there is a liability for the temperature to fall down and even hypothermia might occur. (See temperature chart). Fresh bouts of fever are supposed to be due to fresh embolism occurring in an organ.

Anaemia.—Invariably the patient presents the classical *café-au-lait* appearance which is better understood by observing a case than expressed. This earthy pallor is out of all proportion to the anaemia present. "If a case appears to be one of ordinary valvular heart disease but is accompanied by fever and especially by anaemia not obviously accounted for otherwise, acute or subacute endocarditis is a very probable diagnosis." (Cabot) The anaemia is of the secondary type and is progressive.

Splenic enlargement and other embolic phenomena.—According to Starling the spleen is enlarged in 90 per cent of cases. This enlargement is due both to toxæmia and to infarction in many cases. The explanation of the high incidence of embolism in this disease is sought for in the fact that the vegetations are soft and easily friable. The clinical manifestations depend upon the site of the embolism. Thus hæmaturia, petechial hæmorrhages into the skin and Osler's nodes are frequent. The petechial hæmorrhages are more frequent above the clavicles and around the axillæ, on the upper arms, chest and abdomen. These petechiæ are thought by some authors to be due to the intoxication and co-existent anæmia rather than due to embolism.

Lian, Nicolan and Princlox have described these nodes as areas of inflammation in the true skin, in the centre of which is an arteriole and that they are embolic in origin. In their series of post mortem observations Cowan and Ritchie give the following figures for embolic infarcts which is against the general findings of other workers. According to them lung infarct was more common (30 cases) while kidney, spleen and brain showed only 18, 14 and 11 cases respectively. "Splinter hæmorrhages" are reported to occur under the nails.

Clubbing of fingers.—This is said to occur early in the disease and is however slight. Absence of cyanosis is the rule.

Local signs:—The heart may reveal no abnormality whatsoever during the early periods of the disease. Sooner or later definite localising signs in the way of enlargement of the heart, palpable thrills and auscultatory murmurs are ushered in to clinch our diagnosis. "I do not believe that the quality or exact location of murmurs helps much if at all in interpreting them as evidence for or against acute endocarditis. Much more important is a change in the position or quality of the murmur within a few hours or days under the observation of one person" (R. C. Cabot). This is a very important point to bear in mind. Cabot further observes that a thrill is the most important of all the features in the local examination of the heart.

The blood shows a polymorphonuclear leucocytosis. The R. B. C. count and colour index are low. Vandenberg reaction is usually indirect positive. Urine shows R. B. C., hyaline casts and albumin due to embolism—focal nephritis.

Blood culture.—The value of blood culture in diagnosing sub-acute bacterial endocarditis is a debatable point. It is usually positive at some period of the disease. In Fulton and Levine's hands two out of every three patients gave a positive culture. It has been experimentally showed that the micro-organisms in the blood stream are destroyed in vitro in 24 hrs. when citrated blood is inoculated without culture media. This fact suggests that they are paid out into the blood stream from the heart lesion, but that their duration of life in the former is short. This also explains the fact that the blood cultures are not infrequently sterile. According to Cowan and Ritchie "a positive blood culture is of value as establishing a positive diagnosis and suggesting a

specific line of treatment but a positive result in our own hands has only been obtained in a minority of cases." Further they say that though "a positive blood culture is evidence of the septic nature of the disease it is not invariably obtained in subacute septic cases." Libman, Chapman and others believe in a "Bacteria-free phase" which may last for a considerable time when blood cultures are repeatedly negative though other signs of the disease are present. Osler and Mcrae are of opinion that bacteria are nearly always to be found if a careful technique is employed. Sir Thomas Lewis lays greater stress on the clinical findings than on bacteriological evidence and he dogmatically says that "a blood culture showing non-haemolytic streptococci is insufficient for a diagnosis, even when heart disease is present; but if fever, enlarged spleen, clubbed fingers or embolism is added the diagnosis becomes certain. Failure to cultivate the organisms from the blood is of little value, unless the failure is repeated during long continued fever. A certain diagnosis can often be made from clinical signs when failure to show the organisms has been frequent." From the various views expressed by different workers we are justified in concluding that a series of negative cultures is no proof that the infection is absent.

Transient pains and tenderness in the joints and rarely pericarditis and pleurisy may occur in this disease.

Differential diagnosis.—I wish only to mention the chief conditions that are likely to be mistaken for subacute bacterial endocarditis. These are pneumonia, typhoid fever, malaria, tuberculosis, Malta fever and rheumatic fever with carditis. It is interesting to note the view expressed by Boyd in regard to the last condition mentioned, namely, rheumatic fever. He says that "The view is generally gaining ground that these apparently distinct diseases are really manifestations of the same fundamental process. One is certainly streptococcal in origin and the other probably is. The subacute form is usually preceded by the rheumatic. The microscopic picture of both is a proliferative valvulitis, but in the subacute form a large infected thrombus is added to the lesion and this thrombus is responsible for the characteristic embolic phenomena. Aschoff bodies are rarely found in subacute bacterial endocarditis." Early diagnosis of subacute bacterial endocarditis is however difficult. All the various clinical

A Case of Subacute Bacterial Endocarditis

data have to be gone through systematically and with the hope that a positive blood culture will clinch the diagnosis.

The disease runs a very variable course. The complications include chiefly the embolic accidents. The prognosis is grave. Recovery hardly ever occurs though unauthenticated reports are made. Opinion in Germany about prognosis is so uniquely unanimous as to call for revision of diagnosis in a case which lives. Average duration of the disease is said to be from 6 months to 2 years. Death occurs from progressive weakness and exhaustion or from cardiac failure. Serious embolic accidents, nephritis and intercurrent maladies including pneumonia account for other causes. According to Sir Thomas Lewis this disease affords one of the clearest illustrations of failure being determined by an infective process. The weakening of the heart muscle is to be attributed to poisoning.

Treatment.—J. Mackenzie writes: "When the real nature of the trouble is appreciated in acute affections of the heart, it will be realised how powerless we are directly to modify the diseased process." Numerous methods of treatment have been suggested and tried ranging from drugs of various kinds to the production of artificial fever. Anti-sera and vaccines have their advocates. Though success has been reported from time to time none of them have stood the test of time. Horder is of opinion that "Blood antiseptics seem doomed to failure in dealing with pyogenic blood infections because it is not possible to get the drugs into the blood in a nascent or active condition. Combination with the proteids of the blood cells or the plasma takes place before the drug comes into contact with the micro-organisms. Quinine, mercury, arsenic, carbolic acid, formalin and many other reputed remedies, all fail, whether administered by the mouth subcutaneously or intravenously. The sulpho-carbolates which had a special vogue are equally disappointing. I have used in very large doses without any results. Silver salts in combination with nuclein have been highly spoken of in the treatment of septicæmia, but here again I have never seen any good result in infective endocarditis. The same remark applies to yeast.....". Among other remedies which are still more recently tried I may mention salvarsan sodium cacodylate, eusol, various dye preparations such as flavine and gentian violet etc. intravenously. Deep X-Rays, Radium emanations, diathermy

over the heart, heavy dosage of vitamin A, intramuscular injections of nucleic acid, ultraviolet light treatment and blood transfusion are a few amongst the many failures in the treatment of this septic condition. This is a very depressing fact. Still recently a drug called Prontosil has been put into the market by Bayer & Co., which is worthy of trial in streptococcal infections. The gradual fall in temperature towards the later stages of the disease may raise false hopes in the minds of the inexperienced but these hopes soon prove to be an illusion. Summing up their article on bacterial endocarditis East and Bain conclude that "there is no treatment as yet for bacterial endocarditis".

In the face of these remarks, and reviewing the case I have reported, the following points have struck my interest :—

1. The repeated negative blood culture.
2. The sudden death not due to an embolic accident
3. A strong positive Wassermann reaction.
4. The absence of evidence of previous disease of the heart.
5. The presence of a suspicious urethral discharge.
6. The presence of a diastolic murmur in the aortic area when no change in the aortic valves was noted post-mortem.

Considering these seriatim, I have discussed the importance of blood culture previously. The only additional help we would have gained would have been from more repeated blood cultures which unfortunately the patient refused to allow us to take.

Regarding the second point though sudden death is one of the modes of termination in these cases it is rare to find it without an embolic accident or previous symptoms of heart failure. The causes of sudden death, I have discussed before.

The significance of a positive Wassermann reaction arose in my mind because of the fact that recently some observers have described cases of syphilitic aortitis with high intermittent temperature and a diastolic murmur in the aortic area.

Subacute bacterial endocarditis is usually supposed to be superimposed upon a chronic valvulitis of rheumatic nature which lowers the

resistance to infection and in cases with congenital defects of the valves. Neither of these were noticed in the case under review.

The presence of a suspicious urethral discharge during the course of the illness lead us to doubt the possibility of gonorrhoeal endocarditis. The smear was examined twice and no gonococci were found. The discovery of the small erosion on the glans penis made us no more to doubt about the nature of the discharge

The explanation of the aortic diastolic murmur must be sought in the fact that post-mortem the ascending part of the aorta was slightly dilated. This might have given rise to some leakage. There was no change in the aortic valves to account for the murmur. Why this dilatation has occurred I cannot say. Neither am I able to explain the difference in blood pressure noted in both extremities towards the end of the disease.

In conclusion I wish to express my thanks to Captain R. L. H. Minchin, M.D., I.M.S., and the Superintendent, General Hospital Madras for allowing me to publish this case and to Drs. D. Govinda Reddy, M.D., and S. K. Sundaram, M.D., for their help.

REFERENCES.

1. *Text Book of Medicine*.—Edited by F. W. Price, 1933.
2. *Herbert French*.—Index of Differential diagnosis of Main Symptoms, 1928.
3. *Beumont*.—Text Book of Medicine, 1935.
4. *East and Bain*.—Recent advances in Cardiology, 1936.
5. *R. C. Cabot*.—Facts on the Heart, 1926.
6. *F. W. Price*.—Diseases of the heart, 1927.
7. *Vaquez and Laidlaw*.—Diseases of the heart, 1925.
8. *Sir J. Mackenzie and J. Orr*.—Principles of diagnosis and the treatment in heart affections, 1926.
9. *Sir W. H. Broadbent and F. H. Broadbent*.—Heart diseases.
10. *J. Mackenzie*.—Diseases of the Heart, 1914.
11. *Osler and Mcrae*.—Modern Medicine, 1927.
12. *Chapman*.—The heart and its diseases, 1927.
13. *Boyd*.—Text Book of Pathology, 1930.
14. *Libman*.—American heart Journal, 1925.
15. *Fulton and Levine*.—American Journal of Medicine, 1932.
16. *Starling*.—Quarterly Journal of Medicine, 1923.
17. *Von Glahn and Pappenheimer*.—Archives of internal medicine, 1935.
18. *Sir Thomas Lewis*.—Diseases of the heart, 1933.
19. *Cowan and Ritchie*.—Diseases of the heart, 1935.
20. *British Medical Journal*.

Evolution of Sex.

By

DR. EILEEN J. MACFARLANE

The doctrine of evolution, the central doctrine of modern Biology, was simply an acknowledgment of the instability of living matter. To the Biologist nothing was certain but change. Since pre-historic times, thinkers in different parts of the world had been aware of the fact that just as in the life of each individual, so in the history of the world the more complex appeared after the simpler.

Proceeding, the lecturer, said that when Louis Pasteur finally established the first law of modern Biology *Omnia Vivum ex Vivo* (all life from life), he thereby demolished the theory of special creation for each species; he established the genetic unity of all living things and sounded the death-knell of privileged classes based on right of birth in human society.

A hundred years ago a young naturalist visited some isolated islands in the Pacific Ocean in a small uncomfortable sailing ship called "the Beagle". His observations led him to realise that a process of evolution was going on and had always been going on in nature. Charles Darwin investigated animals and plants carefully twenty-five years more, and in 1859 published what he called an "abstract" entitled "The Origin of Species by means of Natural Selection, or the preservation of favoured races in the struggle for life." The bitter ecclesiastical opposition to Darwin's theories were met and overcome, and in the process freedom to investigate and publish was established for natural scientists, Darwin's ideas had acted as a leaven or ferment in human thought ever since. Pasteur was contemporary with Darwin and so was Marx. As Marx East-

man had pointed out, the background of Hegelian metaphysics made Marxism antipathetic to the hardheaded Anglo-Saxon intellectuals of Britain and America. The leaven of Darwinism had made untenable the hypothesis of racial superiority, as well as the other—that all men were created equal. Now-a-days intelligent men studied the phenomenon of evolution and no longer the question of its reality.

The lecturer said that in the lectures she would give an account of how changes occurred from generation to generation in living things and that in the present lecture she would consider sex from the evolutionary point of view.

Sex was the distinction between two genders the male and the female which were involved in the perpetuation of the race. Race here connoted any stock. A universal characteristic of living things was mortality, so also were growth and reproduction, but not sex. Sexuality was a complication that had appeared in connection with reproduction which had introduced greater efficiency while sacrificing the individual for the good of the race. The lowest and simplest forms of life which were microscopic single-celled units, reproduced themselves by the process of growth alone or asexually and they could perpetuate themselves exactly through indefinitely long period of time. Sexual reproduction was a contradiction in terms, for sexuality involved change as between one generation and the next.

The lecturer then gave a detailed description of the processes of development and of reproduction of living cells and the origin of sexual reproduction.

In fishes, insects and mammals the male, she said, was usually digametic (two types of gamete) while in butterflies and birds the female was digametic, and the egg determined the sex of the off-spring.

In insects and mammals, the Y-chromosome was usually empty of genes, a sort of ghost chromosome. There were some undesirable genes (recessives) which had no effect unless they were contributed by both parents. If such a gene occurred in the X-chromosome of a male, there would be no normal factor to dominate it, and it would be expressed in the body. Such genes were said to be sex-linked because they were in the sex or X-chromosome. A few recessive sex-linked genes caused colour blindness, night blindness, baldness and haemophilia (or bleeding), and they therefore appeared more frequently in males than in females. A woman must receive a factor or gene for colour blindness from both parents in order to be colour blind. Other traits associated with sex, beard, breasts, pitch of voice, etc., were determined by genes not situated in the X-chromosomes but in other chromosome-pairs. Their development was controlled by the internal secretions (or hormones) which were produced by the various endocrine glands in the body, including the reproductive organs or gonads.

The final expression of sex was not determined by the X-chromosome alone, but by a reaction between the X's and the other chromosomes or autosomes which also carried genes controlling sex. Sex was a result of a balance between the male and female producing genes in the nuclei of an organism. Occasionally external influences might cause a disturbance of this balance, and in some cases, even a complete reversal of sex from one to the other.

Sex Reversal

Proceeding, the lecturer said that sex reversal was now well known to take place in the females of certain fish and birds. An individual with the chromosomal constitution of a female functioned normally, then as she began to get older the ovary degenerated and testes were produced. A well-known instance of a domestic hen which became a typical rooster and feathered chicks was reported by Professor Crew of Edinburgh.

Post-mortem examination showed that tuberculosis had practically destroyed the ovaries and that testes had developed. The effect of sex hormones in altering the appearance of individuals completely had been demonstrated by many experimenters. Among some frogs, the sex of the adults was controlled by Piquet by raising fertilized eggs at different temperatures. Embryos raised in a temperature of 10 degrees Centigrade gave 100 per cent females; others of the same batch raised at 27 degrees Centigrade gave almost all males after metamorphosis.

The genic balance which determined the expression of sex might also be upset when varieties from different parts of the world were crossed, as shown by the work of Goldschmidt on *Lymantria* (Gipsy Moth), from Europe and Japan. Intersexes were common among the off-spring, particularly the females. The ovaries were reduced and external characters were male.

Cases of sex reversal and intersexuality as well as normal hermaphroditism (when both male and female gametes were produced by one individual) were known in many animal groups. It was probable that every individual both male and female sex factors—genetic bipotentiality of sex. In many animals the influence of the hereditary formula was so strong that external conditions had almost no influence on sexual differentiation. In others hereditary determination was weaker and external conditions could interfere with the general metabolic processes and alter or reverse those which conditioned sexual development. Masculinity and femininity were thus shown not to be distinct and separate entities. There were two paths of development possible for the germinal tissues of an embryo. These were conditioned by the metabolism as a whole controlled by the genic balance. The final expression of sex, like any other character, was the end point in a concatenation of reactions, susceptible of regulation by all the factors, internal or external that intervened during development.

Sex was primarily determined in higher animals at the moment of fertilization by the protoplasm and the genes in the chromosomes of the zygote, which were contributed by the two gametes. Sexual differentiation was the result of the equilibrium established between two antagonistic sets physiological tendencies. In the same way that the sex of frogs could be reversed by varying the external temperature, so the (factors) genes governing sex reacted either to accelerate or retard metabolism. They would find that just as among protozoa and algae, the factors governing sexuality were fundamentally factors of nutrition in all organisms.

The presence of a hetero-chromosome related to sex merely tended to swing the balance in one direction or the other. As Holdane had suggested, because the Y-chromosome contained very few and sometimes no genes, from a feminist point of view maleness might be considered an aberration. Yet most clever women would prefer to be men, for something in the genetic instability of masculinity seemed to favour the highest types of mental activity. The end point of evolutionary lines was usually degeneration. The Y-chromosome was a degenerated X, empty of most genes, therefore it could be argued that the male condition was more highly evolved than the female; just as our ancestors believed. Science, however, was demonstrating that actually the female and male were the same thing in two tempos like the minuet and the tap dance and that therefore who claimed a fundamental antagonism between the sexes were shadow boxing.

Endocrinology promised unlimited possibilities from the regulation of hormones from the ductless glands even in adults. Science in the future would be able to free most of the population from the disabilities of sex, women must be speeded up mentally and the physiological resistance of men increased. Shelley's vision of a race in which the best of male and of female would be combined in the individual might then be realized.

"There are great possibilities open to us as a biologic species because of our wonderful capacity to vary. Science is discovering how we may control some of these variations and produce the types of men as well as of animals and plants that we need. In education, science is replacing tradition for the first time, and all men may finally realise that race, like species, is an academic concept and should not be an excuse, either for fancying ourselves or for suppressing others."

Dr. Macfarlane, in the course of her lecture, said that one of the primary aims of biologists was to name and classify all living organisms and thus to reduce to order the chaos of Nature. A hundred years before Darwin, Linnaeus, the famous Swedish Naturalist, was the first to stipulate that every organism should be designated by two names, the generic and the specific. In his time, it was believed that the number of species was as many as the different forms created in the beginning. But investigations by later Naturalists had changed that belief.

They now believed that all species and genera originated from pre-existing types and were not each specially created; that like only produced like in a general manner for the essential characteristic of sexual reproduction was change and variation. All living things were related, and they were all recently or remotely descended from common ancestors. The tree was the best figure to represent the three dimensional network of living matter diagrammatically. Horizontal sections across the crown of a large tree would result in a mass of disconnected sections of branches and twigs, which would give no inkling of the complete structure of which they were a part. Thus at any given point in time the organisms living on earth were but a cross-section of the tree of life whose continuous network reached back to a limited past of circumscribed origins, and onward into a future of even greater multiplicity.

When we grasp such a conception of the organic world the lecturer, continuing, said, it becomes obvious that it is

impossible to fit a circumscribed unit of classification to a continuous unstable stream of living forms. Therefore although the *species* as a unit of classification is an arbitrary unit which is delimited by the mental attitude of the human specialist concerned, the taxonomist or systematist as he is called. There is no absolute criterion of species and there are two different points of view among specialists. One type of systematist will call everything a species which differs in some observable characteristic however superficial; he is commonly called a Splitter, in some large genera of plants every bush can be a different species according to this method. Another type of systematist allows for a wide range of variation within the species; he establishes a few species and is therefore called a lumper. Both attitudes are useful; just as in every day life a man who goes out hunting should distinguish between a sheep or tame goat, and an Ibex, and the shepherd needs to distinguish each individual sheep. Therefore since systems of classification cannot be absolute, because forms themselves are fluctuating, some biologists contend that the systematists should try to devise convenient tools with which others can become acquainted with their living fellow-beings.

Tendencies in Human Evolution.

Most mutations lead to loss of complexity and most evolutionary change has been degenerative. In mammalic, the great animal Phylum to which we belong, there has been progressively retarded development. We have completely lost 16 permanent teeth and now have only 32, instead of the usual 48 found in mammals. We are born prematurely and embryonic characters of the mammalia are retained into adult life. Our cranial sutures close late; calcification of the bones is delayed; the snout develops late in other animals and never in man. Most of us never develop a second coat of hair (we had a complete one some months before birth), and in many ways we resemble magnified baby Chimpanzees. Although most lines of organic evolution in the past have ended in extinction,

we comfort ourselves with the fact that for the first time self-conscious mind has arisen to take charge. Man may be able to take control of his racial development and steer around degeneration.

For the first time in the history of the world, in the past 2,000 years or so man has become the most important fossil, *i.e.*, the characteristic living form of a geologic age. The greatest menace to man to-day is not beasts of prey, nor even insects, microbes and filterable viruses, but other men. Since pre-historic times man has realized that he can gain more power and possessions by exploiting and praying upon his own kind than in any other line of endeavour. Now that science has speeded up and improved the methods by which one group enslaves another, it is possible that we shall bring about our own final extinction. The altruism and humanitarian ideals that distinguish our behaviours from that of the apes, seem, to disintegrate in political and economical stress. Here we are about 2,000 million descendants of some ape-like beings which the Zoologists call Hominidae and each one feels that the universe centres in himself. Linnaeus in an optimistic mood called modern man *Homo Sapiens*, but contemporary Americans use the more appropriate abbreviation "saps." Our species may not be wise, but it has an enormous range of variation. There may have been several species of the Hominidae, which, however, were interfertile, like the wild dogs of to-day. To-day all human types can interbreed to give fertile offspring. *Homo Sapiens* is gregarious and also a migrating species, and small groups of men penetrated early into all continents. Each group underwent mutation at different rates and various types survived under the selection of each habitat. Every now and then, particularly in the Eurasian land mass, fresh waves or immigrants arrived, conquered the inhabitants and mated with the aboriginal women. To-day we see several main physical human types, which we call races. Each race shows a wide range of variation within itself and intergrading forms between it and other races.

"Race" is merely a sub-species, and like the species it is an arbitrary category. Laymen often insist that they can distinguish a Jew, or Dutchman, or a Telugu. An anthropologist knows that this is a delusion, for the Jews are not a race but a group of people from several tribes and regions who adopted the Judaistic faith. Dutchmen and Telugus are also a heterogeneous group of people whose ancestors happened to wander into and settle down in a particular geographical area. Any local group is a potential race, but the group is unstable, always altering by emigration and immigration.

Except in some remote islands and mountains there are no pure human races that is, races that are homogenous and well in-bred. Therefore, after nearly forty years of scientific physical anthropology scientists have not yet been able to determine definitely the physical delimitations of race. Skin colour is a very obvious character, but most anthropologists now declare that it is unimportant and unreliable as a racial distinction. There is no single physical criterion of race. We are trying to get a convenient scientific description of local groups from the measurements of large numbers of people. But it is impossible in a great proportion of cases to place a stray individual in his race.

No correlation is known between any physical criterion of race and mental capacity whether in individuals or in groups. On the contrary, we find a parallel series of temperaments and diatheses in each race—the idealistic, the mathematical, the athletic, the sensuous, the stupid and the brutal. Temperamental differences are in practice the greatest barriers between humans, and we may be temperamentally antipathetic to our own brother or sister. The other differences, due to culture and tradition, can be nullified in one generation.

There is no "Spanish race" and no "Burmese race." Such terms merely imply a chance association of human types with common language and tradition. Nationality and patrio-

tism are purely artificial and geographical sentiments fostered by one group of people usually with the purpose of preying upon another set of people. We are all aware of the criminal prostitution of the scientific concept of race under the cloak of religious intolerance or political nationalism for economic advantage. Each race produces every type from idiots to geniuses and great leaders, and there is no racial or class monopoly of virtues or of vices. The experienced anthropologist Hooton of Harvard declares that "while there may be specific racial abilities and disabilities these have not yet been demonstrated."

Blood Groups.

We carelessly speak of pure blood, of mixed blood, of having our ancestor's blood, and so on. Our blood is determined by a series of genes and for the most part it is a non-living and constantly renewed fluid. Certain blood characters illustrate admirably the effects of mutation combined with hybridization in migration on the peoples of the world. There are four different blood groups based on the presence or absence of one or two chemical substances called isoagglutinogens. If blood is to be transfused it is important to know the group of which the patient belongs for some types of blood clot when mixed and death would result.

The isoagglutinogens are conveniently called A and B. Blood may therefore belong to group O (lacking both), to Group A, to Group B, or to Group A B (possessing both). Each isoagglutinogen is determined by a single Mendelian factor or gene, and the inheritance is therefore simple. Moreover there is no evidence that the blood characters have selective value, *i.e.*, in every day life it is no more advantageous to belong to one group rather than the other. In all but a few isolated or inbred communities all four groups will be found in any population. During the War two Polish doctors discovered that the groups occur in entirely different proportions in different races of

people. Anthropologists at once saw the possibilities of this fact for establishing racial diagnoses because most physical characters have a complex inheritance. We cannot test the blood of an individual and then pronounce on his race. Blood grouping in Anthropology is a statistical study of the proportions of the three genes A, B and O in any given population that has reached equilibrium through random matings. It is found that even one generation of random matings between two true breeding or relatively homozygous groups gives a relationship between the percentages of the different blood groups, which persists, even if the population breaks up later into endogamous groups. That the proportions are constant in a given race and are not affected by environment in the course of some centuries is shown by the ratios among gypsies in Hungary which resemble those of Northern Indians.

The proportions of the blood group genes in different populations in all parts of the world have given valuable indications of racial origin. They have also thrown light on prehistoric migrations of human tribes.

In conclusion, Dr. E. J. Macfarlane said :

Blood grouping is a fascinating field of research and South India is practically an unknown area in this respect. Since we want to know proportions of different groups in diverse populations it is important to test hundreds or thousands of bloods from each community.

The same genes and the same four groups are found in other primates, which is an instance of parallel variation and parallel mutations in related groups. Parallel variations can be found among the species in many large genera. Any rose for instance may have pink or white flowers, having smooth or glandular leaves, dwarf or tall stems and so on. The recognition of such parallel series is an aid to simplifying classification and gives an idea of the potentialities of a species.

There are great possibilities open to us as a biologic species because of our wonderful capacity to vary. Science is discovering how we may control some of these variations and produce the types of men as well as of animals and plants that we need. In education, science is replacing tradition for the first time, and all men may finally realise that race, like species is an academic concept and should not be an excuse either for fancying ourselves nor for suppressing others.—“ *The Hindu* ”.

Epitome.

Duodenal Ulcer—New Method of Treatment.

DRS. N. HENNING and L. NORPETH, Med. Univ. Clinic, Leipzig.

A characteristic symptom of an ulcer near the pylorus, especially of a duodenal ulcer, is pain in the night and when fasting; hyperacidity and hypersecretion are always present. The writers have discovered the following special feature of duodenal ulcers. If a fine sound is left in the stomach of a healthy person during his night's sleep and some gastric juice is withdrawn hourly, it becomes evident that all secretion ceases a few hours after falling asleep. If a sufferer from duodenal ulcer is examined in the same way, every hourly withdrawal yields a watery, highly acid secretion. This may certainly be regarded as a sign that it is the highly acid content of the empty stomach which produces the nocturnal pain and that it is eminently important in the pathogenesis of duodenal ulcer. Another inference is that with duodenal ulcer nocturnal treatment is even more important than diurnal. For a long time efforts have been made to restrict the secretion in such patients. This object may often be attained surgically by extensive resection whereas poor results have been achieved with the internal administration of remedies which render the gastric juice alkaline because, after the first effect, the reverse occurs in that increased secretion is incited. The writers have found that the secretion of the gastric mucous membrane is entirely inhibited by hypertonic grape sugar solutions. With the above method of continuous sounding the secretion ceased completely when hypertonic grape-sugar solution was instilled hourly. On this observation they constructed their new method of treatment which has proved its value during the past two years. On the first day of treatment the patient should drink 50 c.c. of a 60 per cent grape-sugar solution hourly during the day; it is taken without difficulty owing to the slight degree of sweetness of grape-sugar. Each evening a fine sound should be introduced into the patient's stomach through the nose, into which the night nurse instils 50 c.c. of the 60 per cent grape-sugar solution every hour during the night without rousing the patient. According

Epitome

317

to the severity of the case this strictest form of treatment can be continued for as long as seems desirable without any other food being given. It is usually possible to give the patient small quantities of rusks with butter between two doses of grape-sugar on the 3rd or 4th day. Gradually pappy food may be added, but the sugar medication by day and night should be continued to the end of the treatment. Medicaments are entirely superfluous.

Spectacular results were achieved with this method even in cases which had not reacted to any other therapy. The troubles disappeared immediately; it is not yet possible to say whether the cures will be permanent since the time for testing the method in this respect has been too short. The patients put on weight as their caloric requirements were met by the grape-sugar. Secondary symptoms have hardly ever been observed; in individual cases there was slight heartburn but no diarrhoea, no hypoglycaemic symptoms, no changes of the blood-sugar level. For the time being the intention is only to treat cases in whom nocturnal hypersecretion has been demonstrated by the new method of treatment, that is to use it chiefly for clinical purposes. It is, however, possible to turn the beneficial effect of internal administration of grape-sugar to account in the treatment of ambulant cases of gastric and duodenal ulcers. (*Arch. Medici* 1935).

In Defence of the Fat Man.

The world is never worried about itself that it cannot pause a moment to worry about the fat man. Thus to-day, when civilization is steering in circles in a pea-soup atmosphere of economic log and battle smoke and nobody knows whither we are drifting, what is coming next or who will run against Mr. Roosevelt, the psychologists of the University of Michigan take time to put the fat student on the platform and look him over.

They find his kind scarce in college, to begin with, compared with the thin, lathy kind the "asthenics," so called. They find him easy going, wanting in zeal and ambition, and blandly indifferent to any scholastic honours that are dangled before his eyes. Most of the summa cum laude chaps, they note, are beanpoles. The fat student is not a fat head, not shy of intelligence, they admit. His mind is every bit as good as the next fellow's, only chooses not to strain it.

All of that is an old story which any layman could have told the psychologists at the start, that releasing them for study the world really needs; study of such things as race prejudices, nationalism, party bias, of humanity's fear of fact-finders and reality and its corresponding preference for propagandists and baloney. There are subjects no end in the psychologists field that are more important, one would think, than the sailings of the corpulent.

After all are they failings? Are the fat men the "dangerous" men that they should be investigated so persistently.

The Ann Arbor authorities say nothing about that. They calmly assume that it is too bad the fat student is the way he is. They go further and call him a "pyknic." There they drop the subject just where it is getting interesting.

Should the matter be left in the air like that? In justice to the fat student and the rotund generally, further research seems in order.

Observe the pageant of history. Marching sturdily, shaking the earth are scores of fat men who made good; fat men who were hard-going and far from indifferent, who battled for this cause and that, led the progress of their day and were foremost in the heart of their countrymen.

Buddha was no feather weight if his thousands of images, invariably bulbous are anything to go by. Confucius and Plato, on similar evidence, had noble corporations, even after allowance is made for the enthusiasm of the admiring sculptors and other artists who handed down their likenesses.

Dr. Samuel Johnson, though huge and ungainly dominated the English speaking intellectual world for a generation or two. Grover Cleveland and William Howard Taft portly men both, were not so wanting in zeal for good works or in laudable ambition for honours as to stop short of elevation to the Presidency. Nor should the hard-toiling though chubby Mr. Hoover with his medicine ball be overlooked. Dean Andrew West, distinguished for ample girth won a famous argument with no less asthenic opponent than Woodrow Wilson.

Look back through the record and you will find only a few fat villains. When they went in for villainy, however, they were thorough at it. Take Nero for a shining example. Nero was exceedingly stout yet he didn't let it slow him up. There was nothing tinhorn about Nero. He assassinated his mother and his wife. He poisoned his friends. He threw Jews and Christians to the lions. He pillaged the poor, soaked the rich, burned the town and appeared in public as a crooner. He was so terrible that people trembled at his name for several centuries and told one another he might come back. His success shows what a fat man can do when he puts his mind to it.

Other fat men who made names for themselves in that line were Charles the Fat and Louis XIV of France and Henry VIII of England; Charles for incompetence, Louis for pride, arrogance and cruelty; Henry for lopping off the heads of his queens and his bravest clergymen and for leading a private life of which the less said the better. Such monarchs were exceptions to the rule; most fat kings have been Old King Coles and merry old souls.

Again few fat men have been militarists, rattling the sabre, breathing fire and slaughter and gloriously plunging other people's countries and their own into war and debt and unemployment and all that. There was "stout Cortez," true; and Napoleon Bonaparte had a paunch, toward the last; and among the fighting heroes here and there have been some who were sure backache for any war horse—Papa Joffre and our own General Shafter, to name a couple. But fat warriors are not many. Fat men are men of peace. The grinning world supposes it is because they can neither fight nor run, though it isn't that at all.

There are few fat criminals in prison or out. Few fat men ever appear in the divorce court. Nor are many found among the big go-getters of the money market. The characteristic leaders of our economy are strong and solid but not often fat.

Are fat men to be disparaged and discouraged? Reader of Samuel Blythe and Irwin Cobb or Christopher Morley and Heywood Brown, of G. K. Chesterton & Alexander Woollcott do not say so. Picture fans who flock to see Charles Laughton and Emil Jannings, baseball fans who cheer Babe Ruth's home runs; art lovers who admire Diego

Rivera's murals, and the lads who follow the wrestling matches vote "no" unanimously. So do the children. How their favourite saint manages to get down the chimney on Christmas Eve is a perpetual mystery.

Some of the immortals of the most strenuous of games have had figures more than aldermanic. "Cupids" and "Duckys" and "Pudges" crowd the football hall of fame. Large among them looms William (Big Bill) Edwards, who, they say, once halted the Empire State Express at a lowly way station by telegraphing to the conductor, "Please stop for a large party."

The world likes to joke the fat men, but the fat men often have the last laugh. Shakespeare invented Falstaff for purpose of ridicule and Falstaff stole the show. Cervantes gave Don Quixote a fat squire, Sancho Panza, who brought the story to life and makes it live to this day. Dickens created Mr. Pickwick as a marf for laughter and Pickwick promptly endeared himself to the public. In the same book another egg-shaped character Mr. Wardle's Fat Boy, went over almost as big. In our own time, Fatty Arbuckle was liked by millions.

Science, always turning the spot-light on the fat man, has lately discovered some new facts about him. The world says "he is even tempered and peaceable because he is fat." Science says it is the other way around; he is fat because he is even-tempered and peaceable. Glands figure in the case; the pituitary gland first which when under-active makes for fleshiness; but still more the adrenal glands. These in time of fear, anxiety, anger or forced effort, release adrenalin, which draws stored fat from the body tissues to be consumed as fuel during the excitement or the strain. Persons naturally over-eager or easily frightened, worried, vexed or enraged are typically thin. Persons who have good control of their adrenalin reserve tend towards plumpness. The control is mainly involuntary, but can be influenced by taking thought.

From which it is clear that the fat man's "bay window" is a credit to his nature, a badge of courage, a testimonial to his poise and an advertisement of his dependability. For physical reasons, the insurance doctors say, he should golf it off or otherwise reduce it, "Any

man who is twenty pounds over-weight is sick" they warn. But no psychologist in the Big Pen circuit or elsewhere can advance any moral reason to the fat man against remaining as he is—and even viewing his reflection in the shop windows with pride.—Ry L. H. Robbins: Condensed from *The New York Times Magazine*.

What Medicine Learned in 1935.

One of the greatest achievements of medicine in 1935 was undoubtedly the final adoption of the late Wagner-Jauregg's dietetic treatment of migraine.

Efficacious remedies for sick headache were known before his time, of course. The markets of all countries are swamped with patent medicines which promise relief. In fact, a pill or a tablet is often sufficient to make a headache disappear, but there are cases in which they fail to bring relief.

To-day we are in a position to conquer even the most obstinate sick headache, although not by means of pharmaceutical formulas. Years of research had convinced Wagner-Jauregg that certain diets, for example the one prescribed for diabetics had the peculiar property of converting a chronic and degenerate migraine into an ordinary headache which yields to treatment.

However, it would be a mistake to hold the excess of sugar in the organism responsible for all such troubles. The Viennese dermatologist Pulayhas, on the contrary, established that women who eliminate sugar from their diet because they wish to remain slim, are subject to fits of weakness and phlebitis. Their condition improves if they are put on a diet rich in sugar for some time, in combination of course with such specific treatments as the case may call for.

The same may be said of salt. The healing properties of common salt in certain cases of herpes were known for a long time. What was not known was that it has beneficial effects upon the evolution of other diseases. If the body loses too much salt because of excessive transpiration, or as a result of diarrhoea or a saltless diet, the deficiency may manifest itself in a tendency to fainting fits or lead to blood poisoning (this we learned in 1935) or to Addison's disease, which is a very serious trouble indeed and is due to a deficiency of the suprarenal glands.

Experimental therapeutics was for a long time the object of scorn because of its emphasis upon animal experiments. More than once its pioneers were ridiculed as veterinarians.

But the marvellous progress of hormonotherapy shows how utterly wrong and unfounded the above accusations were. Thanks to animal experiments, we have conquered a number of maladies for which nature does not supply medicinal herbs. For example a report presented at the 1935 Dermatological Congress stated that loss of hair and partial baldness of men and women could be successfully treated with the female sexual hormone.

In 1935, Russian chemist Ruzicka produced a synthetic male hormone, which proved efficacious not only in cases of sexual deficiency but as a remedy for muscular atrophy, a disease which formerly made helpless cripples of its victims.

Also in 1935 Butenandt produced the "hormone with the yellow body" in the laboratory, which stops the most violent hæmorrhages in women and successfully combats the tendency to miscarriages.

Furthermore, it was during 1935 that Elauberg finished a series of experiments proving that injections of certain hormone extracts could produce temporary sterility in women to whom a new pregnancy might prove fatal.

The year 1935 is also the birth year of the "chastity hormone" secreted by the pineal gland. The Viennese surgeon Engels found that the action of this gland counter-balanced that of the pituitary gland, generally considered the vehicle of the sexual impulse. This discovery allows us to envisage the possibility of combating certain conditions of excitation, frequent for example among inmates of penitentiaries.

Advance in techniques have contributed to the progress of medicine. In Vienna, Eisenmenger has put the finishing touches on an apparatus with which it is possible to revive respiration and circulation of the blood after accidents, in other words to revive subjects that would otherwise have to be given up as dead. Immediate relief is obtained with this marvellous device in cases of paralysis of the respiratory muscles.

Professor Kustner of the Leipzig Gynæcological Clinic has tried out a new lamp which gives forth an absolutely pure red light without the slightest trace of a heat ray. This light is possessed of an extraordinary penetrating force. It reaches far beneath the skin and stimulates the production of the ductless gland. It has been found to bring immediate relief in cases of menstrual disturbances.

The dust aspirator is another 1935 acquisition to medicine. By means of this device the film which obstructs the respiratory tract in diphtheria may be sucked up. At an American hospital where it is already used not one trachotomy had to be performed during the whole year 1935.

And cancer? Alas, 1935 will not go down in medical history as the year of the final victory over this terrible scourge. Radium and surgery are still the only efficacious therapeutics. Nevertheless we need not despair even if these fail. The physician has numerous means at his disposal to-day with which he can at least bring relief to the sufferer and often stop the progress of the disease. Appropriate diets have been experimented with and definitely recommended. A number of new remedies have been created, amongst which are snake venoms. Their choice varies from case to case and the results already obtained are very promising, in that at least they relieve the sufferings of incurable cancer patients without turning them into drug addicts—By Walter Finckler. Condensed from *Noues Wiener Journal, Vienna*.

Editorial Notes.

The appointment of Rao Bahadur A. Lakshmanaswami Mudaliar Avl., B.A., M.D., F.C.O.G. (Eng.) as acting Vice-Chancellor has given great pleasure to one and all. The mantle of this high office could not have rested so gracefully on another shoulder in this Presidency. His winning manners, gift of speech and thorough knowledge of working of the different departments of the University and personal acquaintance with most of the members of the various "bodies" of the University on the Syndicate, Senate, Academic Council, etc., will stand him in good stead. Still, his main inclination, we are sure, will be with his profession. The students, for a time, will miss his instructive lectures and clinical demonstration, and the public his obstetric and gynaecological help to a certain extent.

Dr. N. S. Narasimha Iyer, on his return from United Kingdom has rejoined his former place in the staff. He has passed with credit the F.R.C.S. Examination of England, and come back to us better equipped for the post. Many of our students should keep him as their ideal, for he has always been a studious student. We offer him our congratulations.

Rao Bahadur Dr. T. S. Tirumurthi, M.B. & C.M., D.T.M. & H., has come back to the College, after many years of exile in Vizagapatam, as Professor of Pathology, on Dr. Goyle, Ph. D. relinquishing the post for a place in the Indian Research Department. As most of us are well-informed of his many-sided activities we refrain from further comment.

The following minor changes have occurred in the staff:—
Col. Plumtre, I.M.S., is the acting Principal in the place of

Col. C. Newcomb, I. M. S., posted to act as Surgeon-General. Dr. M. R. Guruswami Mudaliar, B.A., M.D., is acting as Professor of Medicine in the place of Major R. G. McRobert, I. M. S., who has proceeded on a short leave to United Kingdom. Dr. Achutha Menon, F.R.C.S., is carrying on the duties of Rao Bahadur A. Lakshmanaswami Mudaliar.

Authorities are still shy of the hostel for our students. Promises and assurances have often been given, but nothing in practice has been effected. Tiffin room is still in the same place and the restaurant has a large scope for improvement. We hope that the Principal and the College Council will solve these and bring satisfaction soon.

We are quite confident that the Board of Studies in Medicine will move the higher authorities of the University to institute a degree in Dental Surgery. This is a crying need in the city and mofussil. Students and good staff are not lacking and the public will be grateful to the University for trained and qualified Dentists. The scheme drawn up by Dr. Badcock is still a dead letter, and we are informed that the University of Lucknow is planning a Dental Degree based on this scheme (published in this issue as reprint). Why not our University lead?

The following members of Provincial Medical Service, all being from the staff of the Medical College, have been the recipient of various honours during the King's Birthday:—

1. Dr. H. S. Hensman, L.M.S., M.R.C.S. (Eng.) L.R.C.P. (London) M.P.C. ... V.H.A.S.

2. Mr. R. Ry. S. Ramakrishnan Avl., L.M. & S. (Mad.), L.R.C.P. & S. (Edin.), D.T.M. & H. Lond. ... Rao Bahadur.

3. M. R. Ry. S. Rajagopala Nayudu Avl, B.A., M.B.,
B.S. (Mad), M.Sc. (Lond.) D.I.C., F.I.C. ... *M.B.E.*

The Provincial Medical Association availed this opportunity and were 'at home' to the Birthday Honours recipients, and also to Dr. A. Lakshmanaswami Mudaliar and, Dr. Narasimha Iyer.

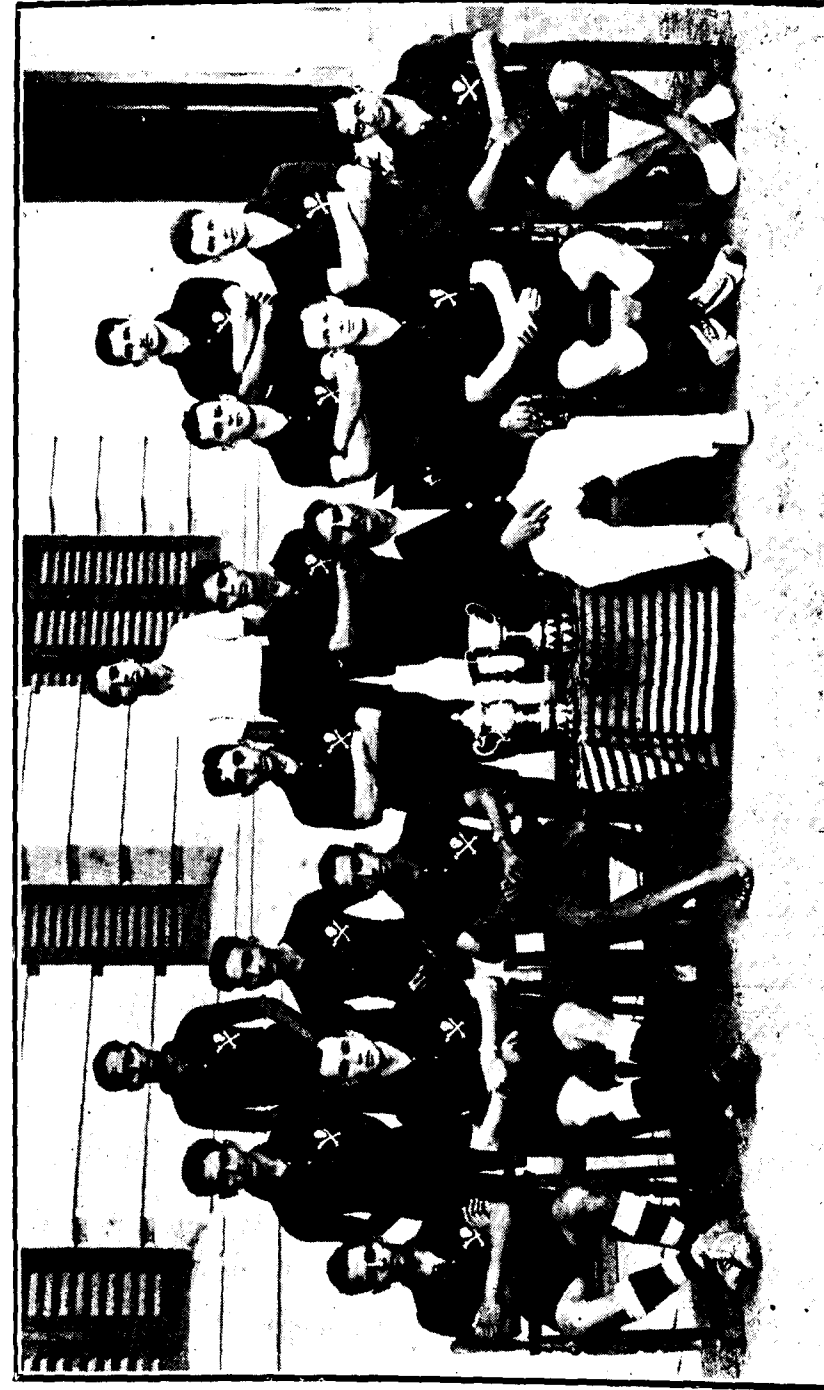
It may not be out of place to say a word or two with regard to the magazine during the closing of this year. We thank Dr. David, Professor of Pharmacology, for the unstinted help he has always willingly given and we would also like to thank Mr. Maduram Santhosham for his great help with his caricatures, songs and humorous articles, etc., contributed for nearly over a period of four years.

The general Editor was connected with the Magazine for over 5 years. When he took over the Magazine in 1932 the finances of the Magazine showed the balance of nearly Rs. 1,036. To-day the Magazine has a balance of Rs 2,176 excluding Rs. 2,000 held as Post Office Cash Certificate, *i. e.*, a Credit Balance of Rs. 4,212.

MADRAS MEDICAL COLLEGE.

FOOTBALL.

Winners Lawley and Wilson Cup
1935-'36.



Top Row:—A. G. Chacko, A. N. Iyer, N. V. Sredharan.

Mid Row:—C. W. Chacko, C. J. Antony, T. K. Thomas, N. R. Viswanathan, Hughes, Penhear.

Sitting:—B. Pereira, Mc'Murray, P. O. Oommen (*Captain*), Dr. Habibulla (*Hon. Sports Secretary*), E. G. Cullen, A. K. Haridoss.

(Photo by Doss Bros.)

MADRAS MEDICAL COLLEGE.

HOCKEY.

Winners M. U. C. Gold Cup, Stoke's Shield Maharaja of Mysore's Cup.



Top Row :— Gomez.

Mid Row :— A. K. Haridoss, Penhearo, Coshan, Hogg, Huges, Jansen.

Sitting :— Levang, Mc Murray, E. G. Cullen (*Captain*), Dr. Habibulla (*Honry. Sports Secretary*), Mc Namara, B. Pereira.

Association Notes.

Fifteenth annual report of the Madras Medical College Association for the year 1935-36 (Read and passed in the General body meeting held on 26-3-'36.)

MR. PRESIDENT SIR, LADIES AND GENTLEMEN,

I have very great pleasure to submit the 15th annual report of the college association for the year 1935-36.

This year is a memorable and momentous one in the history of our college association because we had to take an active part in the college centenary celebrations.

During the last summer vacation an excursion was arranged to Ennore and it was enjoyed by everyone who attended it. For want of time we were not able to arrange many more of the kind. I wish excursions and tours of this kind are arranged every year.

Meetings.—A general body meeting was held on 15-7-'35 when office bearers of the year were elected and topics of varied nature were discussed. There were two condolence meetings during the year in connection with the death of two of our valued members, one of them being a lady student, Miss Anna Kutti, who was in the first year and the other was Mr. Kunhiraman who was in the final year, at the time of their death. The resolution of condolence was sent to the members of the respective bereaved families. A memorial fund has been raised and the amount realised through the respective class representatives came up to nearly Rs. 44. The photos of Miss Anna Kutti and Mr. Kunhiraman are given for enlargement. We have now nearly six enlarged photos and we have no place to keep them. May I take this opportunity to request our president to remove the almirahs kept in our common hall, so that we can place these photos in that hall?

There were three General body meetings, two executive committee meetings and one Magazine committee meeting this year. (A short report of some of the meetings had already appeared in our magazines and the rest will be published later.)

Graduates' Reception.—The usual graduates' reception was held this year on a very grand scale in our new examination hall. (For the full report see the College Magazine August 1935.)

The important event of the year was the centenary celebration. We had the privilege and pleasure of having celebrated it in a fitting manner. In the preparatory period, there was certain amount of misunderstanding among the members about their participation in the celebrations. Due to the benevolent attitude of our Principal Lt.-Col. C. Newcombe, to-days' president, and timely help and advice of our vice-presidents things were set right and according to the wish of the members two students' representatives, *viz.*, the secretary and assistant secretary were included in the executive committee of the centenary.

It looked at first as if the celebrations were to be conducted by the old students of this College, but in fact the show was put up mainly by our own association. In this connection it would be interesting to mention a few facts regarding the part played by the present students in the celebrations. We had a trained band of volunteers for the general work. We began the celebrations by a flag-day when most of our students, ladies as well as gentlemen took part most willingly and within a short time of four hours they could collect nearly Rs. 800 and odd. The exhibition was conducted in the most efficient manner by the students and this has created a very good impression on the public and it is hoped that exhibitions of the kind may be arranged every year or at least once in two years by my successors. This will, not only attract public attention but also bring some money to our association, which can be utilised in useful ways.

Another important event worth mentioning is the fancy dress dinner in which more than 500 of our students took part in fancy costumes. This was the first of its kind in the history of our college. It is the general opinion that functions of this sort should be arranged in future. After the dinner as well as on the last day of the celebrations, the students went round the city in decorated lorries which was really enjoyable and a sight worth-seeing.

Hostel.—Medical College student's hostel which was started last year is being run efficiently by the student warden Mr. K. Nagappa

Alva, who is also the assistant secretary of our association. The hostel has grown to such an extent that it can be compared to any other institution of its kind in the city. Our to-day's President Lt.-Col. Clive Newcombe is the patron of the hostel. The Vice-presidents of the association Dr. M. R. Guruswami Mudaliar and Dr. A. Lakshmanaswami Mudaliar are the Medical officer and the adviser respectively. The Hon. Treasurer of the association Dr. K. S. Viswanathan is also the Hon. Treasurer of the hostel. A clerk from the college office is a part time clerk in the hostel. We recently celebrated the 2nd anniversary of the hostel with Lt.-Col. Clive Newcombe, Surgeon-General as the President. (The report appeared in the previous issue of the magazine).

Magazine.—The great delay in publishing the magazine is chiefly due to the difficulty of getting articles. May I request all the members of the association and the old students to send as many articles as possible?

My thanks are due to Lt.-Col. K. G. Pandalai and Dr. S. Thambiah for the interest they have evinced in conducting the magazine. To our students editors I owe a debt of gratitude for the able way they have rendered help in publishing the magazine.

Common Hall.—It is our fond hope that the common hall which we have now should be properly equipped. For this the co-operation of the students is needed. It was proposed in the last executive committee meeting to collect 0-8-0 more from each member of the association. I hope every one without hesitation will vote for the proposal.

Future Work.—It was resolved in the first General Body Meeting to establish a dramatic club in our college. The time at my disposal was very short and so I was not able to organise the club this year in the midst of other activities. I hope my successor will devote some time during the summer vacation and organise the club when the college reopens.

In conclusion I beg to offer my homage to our President under whom I had the rare and proud privilege of working during the short tenure of my office. As one who had been moving very closely with

him I can understand the interest he takes in the activity of the association.

To the Vice-Presidents and to our honorary treasurer, I am greatly indebted for the able guidance and sound advice they have always given me.

I take this opportunity to pay my homage to all our patrons, well-wishers, subscribers and contributors of our magazine. Last but not least, my thanks are also legitimately due to all members of our association who helped me to keep up the prestige of our association and its activities during the year.

I wish the association increasing prosperity and all glory.

R. RAJAGOPAL REDDY,
General Secretary (1935-'36)

Receipts and Payments Account of the Madras Medical College Association and Magazine for the year ending 28th February 1936.

RECEIPTS.	Rs. A. P.		Rs. A. P.		PAYMENTS.	Rs. A. P.		Rs. A. P.	
	Rs.	A. P.	Rs.	A. P.		Rs.	A. P.	Rs.	A. P.
To Cash Balance as on 1-3-1935 :-									
Association Account.	104	11 5			By Association :-				
Magazine Account	1,235	0 6			Graduates' Day reception and entertain-ment	817	10 0		
					Memorial Fund expenses	48	0 0		
" Association :-			1,339	11 11				865	10 0
Subscription	761	0 0			Magazine :-				
Interest on Bank current account	20	4 8			Audit fees	30	0 0		
Memorial Fund Collections	53	15 0			Printing and Stationery	864	3 9		
Security deposit	200	0 0			Postage	18	13 9		
Rent collections	28	0 0			Establishment	201	0 0		
			1,063	3 8	Conveyance and cooly	1	4 0		
" Magazine :-					Bank charges	1	2 0		
Subscriptions	1,616	0 0						1,116	7 6
Advertisements	442	4 0			Closing Balance as per Cash Book :-				
			2,058	4 0	Association Account	302	5 1		
					Magazine Account	2,176	13 0		
Total			4,461	3 7	Total			2,479	2 1
								4,461	3 7

Examined and found correct.

P. S.—The above statement of accounts is exclusive of the sum of Rs. 2,000 from the Magazine account invested in 5 year Post Office Cash Certificates on 11-11-1932 in the name of the President, Madras Medical College Association.

MADRAS,
11th March 1936.

K. S. VISWANATHAN,
Hon. Treasurer, Medical College Association.

K. G. PANDALAI, LIEUT.-COL., I.M.S.,
President, Magazine Committee.

K. JOHN & CO.,
Registered Accountants, Auditors.

C. M. PLUMPTRE, LIEUT.-COL., I.M.S.,
President, Madras Medical College Assn.

An Appeal.

To

OUR SYMPATHISERS AND WELL-WISHERS.

Sir,
Madam,

It may be within your recollection that the present Medical College Students' Hostel at 'Jaya Mansions' was started to provide adequate shelter and organised hostel life to the students of our College who were hitherto leading a nomadic life. In spite of criticisms from high and low the sponsors of this scheme started the hostel with the hope that if their venture would prove successful either the Government or the College authorities would be pleased to come forward to run the useful and much needed institution till a permanent hostel could be found.

The hostel is working very successfully and at present harbours about 80 students. But until the Government provide us a new and a suitable hostel, the college authorities do not like to interfere with the present harmonious working of the hostel and feel that this hostel has all the charm of a self-disciplined and self-managed hostel.

Love might hope where reason would despair. It devolves therefore on us, the students, past and present of the college, and all the members of the staff and our sympathisers who we know feel unanimously that this venture the first of its kind in Madras, nay perhaps in any part of India should be preserved and the novel ideal with which the scheme was promoted is stabilized. For fulfilling these, two things seem to be imperative, so that the burden of management does not seriously hamper the legitimate duty of any student who has anything to do with its management.

1. A reserve fund to meet unforeseen expenses and to improve our common room, library, etc.
2. A self-managed mess with our own utensils, servants, etc., as the present contract system is not quite satisfactory.

An Appeal

333

We know that a tender plant will die out if it keeps merely bragg-ing of the virtue of its acorn and refuses to grasp and worn into life the material from the surrounding soil, water, air and light. A sum of Rs. 20, has already been received from Mrs Cruickshank and we feel it our duty to thank her for her spontaneous response.

If you are favourably impressed with our venture and think it deserves your esteemed patronage, we request you to extend to this appeal your sympathetic consideration.

Thanking you in anticipation,
Yours faithfully,
Warden and Members of the
Medical College Students' Hostel.

N.B.—Subscriptions, periodicals and books can be sent to any of the following which will be duly acknowledged in our College Magazine.

1. Dr. A. Lakshmanaswamy Mudaliar.
2. Dr. K. S. Viswanathan.
3. Editor, Medical College Magazine.
4. Warden, Medical College Students' Hostel.

5th Madras U. T. C. Anthem.

Tune (Atch-- atcha).

(Chorus).

1. We are soldiers of 5th M. U. T. C.
Smart and soldierly we our duty see.
We have our parades near the Cocum
Our camp at Pallavaram.
Some come from ' Theppakkulam '
Too noisy with their drum

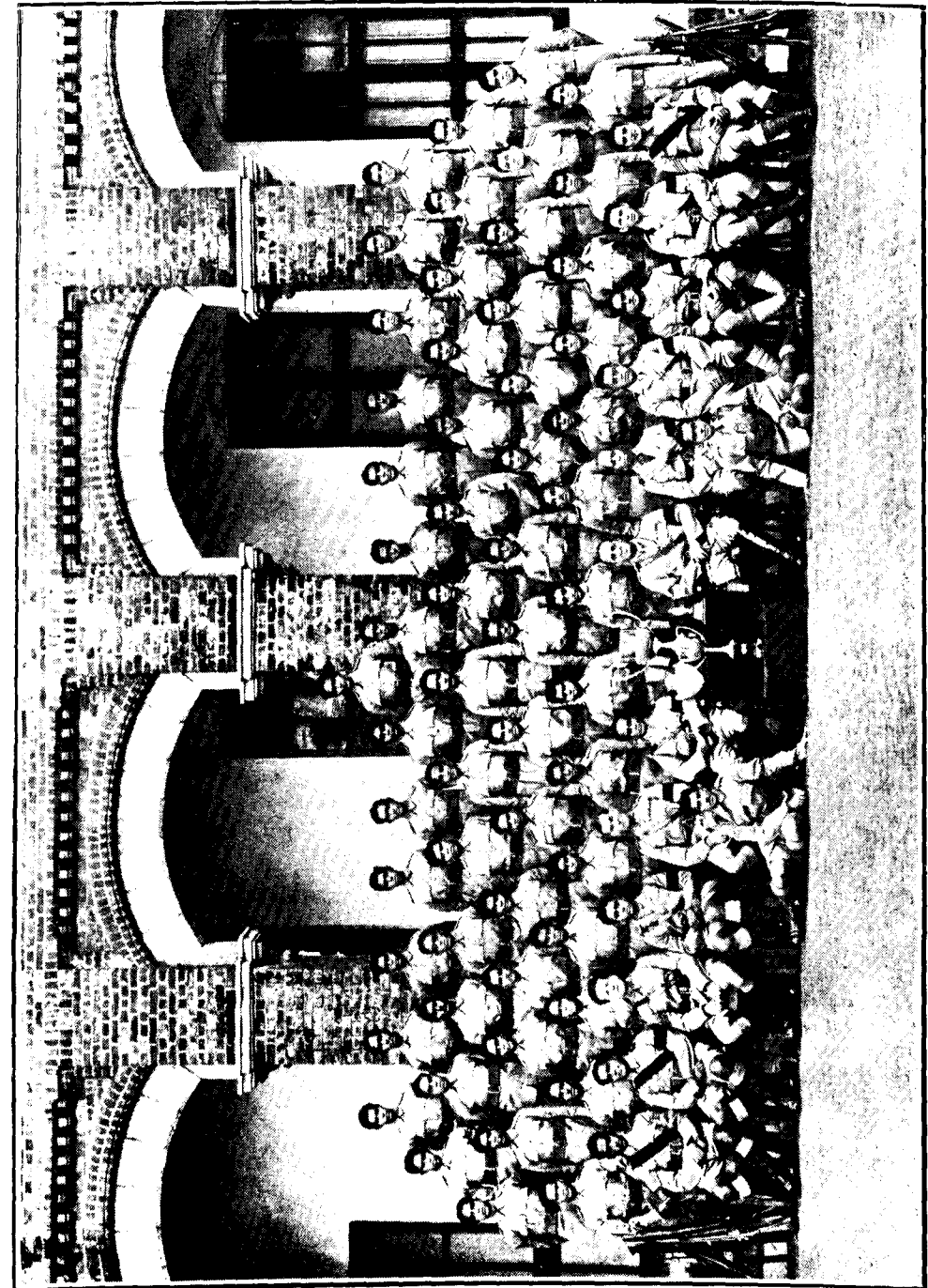
(Or as alternative sing— Oh ! the devil takes care of them).

Who are these smiling soldiers that you see ?
We are soldiers of 5th M. U. T. C.

(Solo) If your foot and boot fit right
Then that would be alright,
But if its tight and starts to bite
This is the way to fight.
You'd feel strong the way not long
As you're marching along
If you shout and if you clout out this U. T. C.
Song.

(Chorus).

2. Oh ! how I love this corps now, appappa !
It is a bit of bore though, appapoe,
To walk ten miles is not a trifle,



"A" Coy. (Medical) 5th (Madras) Bn. U. T. C.

And that too with a rifle.

Thus parade time is awful,

But otherwise its joyful.

Joyful to follow Captain Ponnappa

E'en if it be to Addis abbaba.

(Solo) *Verse dedicated to Capt. Ponnappa the kind master.*

Ponnappa my master

Who made my grub much better

Two three month later

He leaving me for ever.

Master may he live long

Happy all along,

And think of Pallavaram and sing this U. T. C.
Song.

A. W. MATHURAM SATOSHAMN.

The Need for an Indigenous Profession of Dental Surgery in India*

WITH A BRIEF HISTORY OF THE EFFORTS TO MEET IT MADE UNDER THE AUSPICES OF THE MADRAS MEDICAL DEPARTMENT.

By C. FRAMPTON BADCOCK, L.D.S. R.C.S. (Eng.),

Member of the British Dental Association, and lately Professor of Dental Surgery, Medical College, Madras.

The sub-continent of British India is unique among civilised countries in that it has no indigenous profession of dental surgery. Yet the incidence of dental disease is as severe in its crowded populations as on the average of those of other parts of the earth, and there is consequently a widespread demand for dental treatment. This demand should be met by an indigenous profession of dental surgery.

There is in India—though natives of Canada, Norway, Japan, or Argentina, for example, might hardly credit it—no University affiliated school for training dental surgeons, no recognised dental hospital where they may gain experience, and no registrable diploma conferred by Government.

* Reprinted from the Ind. Med. Gaz., 1927 June.

The question of qualified Dental Service has been before us in this country for a long time and with no prospect of a speedy solution. The practice of dental profession in this country is unrestricted and it only requires the necessary capital to buy a dental chair, drill and a few instruments to create a D. D. S. of any man-in-the-street. It is high time that a move is made in the right direction by instituting recognized courses by the Indian Universities. As early as 1927 Dr. Badcock had prepared a well thoughtout plan for the inaugurating such a course in the Madras Medical College. But it created no enthusiasm. Recently acting on the report of the Tej Bahadur Sapru Committee on unemployment the University of Lucknow has signified its willingness to start a course in Dental Surgery. It is a curious anomaly that while the Madras University has Dental Surgery as one of the special subjects for the M. S. degree. No qualifying degree exists. This is our excuse for resuscitating Dr. Badcock's Plea at this juncture. (Note by Dr. J. C. David, Prof. of Pharmacology.)

As an instance of what other countries have had to do in this respect, we may take the case of Brazil. About 20 years ago the Brazilian Government, "obliged to take action against the importation of U. S. dentists," established a dental hospital and school, and instituted a diploma and the registration of its holders. And the reason they were obliged to was, presumably, that they might retain a remunerative profession in the hands of the Brazilians.

In India, under present conditions, young men and women of the educated classes are debarred from engaging in the honourable practice of what should be a remunerative profession unless, in order to acquire the necessary training, they are prepared to travel to remote countries and to reside abroad for several years.

Consequently, now that Great Britain prohibits unregistered practice, and all the Dominions and some of the crown Colonies of the British Empire have protected themselves by Dental Acts, India is rapidly becoming the last of the happy hunting grounds left to inadequately qualified and irresponsible dental practitioners and quacks of all degrees.

It is proposed in this article to consider briefly this state of affairs, and incidentally to outline one of the attempts made to supply the deficiency; and, for the sake of clearness, to do so under the following heads:—

(1) The prevalence in India of Diseases of the Teeth, and the need for skilled Treatment thereof.

(2) The Existence of Public Services for the Official Practice, and, of Medical Acts to control the Unofficial Practice, of Medicine and Allied Faculties, with the conspicuous Exception of Dental Surgery.

(3) The Professorship of Dental Surgery in the Madras Medical College, and the Dental Department at the Madras General Hospital.

(4) The instructions of the Madras Government to prepare Schemes for a Dental School and Hospital, a Diploma, and Registration.

(5) The Miller Scheme, and the subsequent Modifications thereof.

(6) The Public Demand for Dental Training, and a Profession of Dental Surgery.

(7) The Post-Collegiate Course in Dental Surgery for Civil Assistant Surgeons, and Sub-Assistant Surgeons.

(8) The Royapuram Dental Hospital, and Designs for a Dental Department in the Projected General Hospital at Egmore.

(1) The prevalence of diseases of the teeth in the Presidencies and Principalities of India and Burma, and the necessity for scientific and skilled treatment of these diseases, both with regard to dental efficiency and relief of dental pain, and also to protection from bodily disease arising from neglect of disease of the teeth.

The teeth and jaws of the native races of India, Burma and Ceylon, are of primitive type; that is to say, amongst the mass of the population the structure, form, and arrangement, of the teeth are unimpaired morphologically by the inherited effects of Western civilization.

As compared with the teeth of European races, they are of more pronouncedly anthropoid type, bigger, stronger, and more thoroughly calcified, so much so, indeed as to be under normal conditions almost immune to attack by dental caries.

One would think that amongst such people there would be very little liability to dental disease. Indeed, Europeans coming out to the East are generally struck by the bigness, whiteness, and apparent soundness of the teeth of the inhabitants.

The fact is however that amongst Oriental races, although dental caries, the scourge of the Occident, is comparatively rare, the teeth suffer from disabilities not less serious and rarely as widespread.

The weak point in the dental economy of Oriental peoples would seem to be the periosteal ligament interposed between the root of the teeth and its socket.

This periosteal ligament functions partly as a pad to withstand sudden pressures, stress and strains sustained during the crushing of hard substances. It has been evolved in accordance with the primitive necessity of dealing with hard, tough, and uncooked foodstuffs. Under Indian conditions, and especially from the nature of the racial dietaries it has for ages been subjected only to the slighter work involved in masticating cooked vegetable food and the more or less gentle pressures of "pan chewing", etc.

It necessarily suffers from the inherited effects of insufficient functioning, and is losing much of its natural opsonic resistance to the attacks of septic organisms. It has consequently become liable to be affected by a chronic inflammation, generally known as "pyorrhoea alveolaris", resulting in Osteitis of the bony socket, by which the socket is gradually destroyed and excreted as pus, the tooth being eventually extruded by a process closely akin to ulceration.

This condition of alveolar pyorrhoea is very prevalent among vegetarian races, including the Chinese and Japanese. It leads to early loss of the teeth and is a frequent cause of many systemic disorders.

(For an account of pyorrhoea in India "Pyorrhoea Alveolaris from a Tropical Standpoint," Ind. Med. Gaz., Oct & Nov. 1908).

Pyorrhoea may therefore be said to be the special disease to which the teeth of Orientals as such are liable.

India however is no longer immune from Western civilisation, and its effects are evidenced by change in habits, custom, and diet. The effects are particularly noticeable in the big towns. Change of diet, especially the increased consumption of flesh foods and alcohol, is mainly responsible for the introduction, especially into the crowded cities, of "dental caries," i.e., bacterial disintegration of the calcified tissues of the teeth, and for its considerable increase during the last quarter of a century or so.

Alveolar pyorrhoea and dental caries and their concomitants and sequelae constitute the chief disorders to which the teeth are liable, which bring about their loss and which may give rise to general systemic infection, being a frequent cause of serious disease.

So that, as things are now, we have to reckon and shall have to reckon increasingly in the future, with dental disease very similar to that obtaining elsewhere.

Moreover, besides all classes of Indians, there is the fairly large and ubiquitous European and Anglo-Indian population to be considered, both as dental patients and as prospective dental practitioners.

A matter of minor importance as compared to dental disease, by reasons of its relative infrequency, is fracture of the jaw. In the big industrial centres particularly jaw fractures are always occurring. In a general hospital there is no provision, either of skill or equipment, for the mechanical treatment of such injuries. Simple fractures of the mandible are treated by ordinary bandages, and more complex cases by plaster bandaging or ligature of the fractured edges. These surgical methods, while sometimes suitable, and in rare instances the only possible treatment, are in most cases, both for temporary comfort and permanent cure, far inferior to the adaptation of splints, and may result for instance in imperfect union or bad

alignment. The mechanical treatment of jaw injuries has become a matter for experts and can only be carried out in a properly equipped and staffed dental hospital, or by a qualified dental surgeon.

Consequently, there is as great a need in India as elsewhere for a regular and ethical profession of dental surgery to deal scientifically and technically with the prevention and treatment of dental disease and the efficient replacement of lost natural dentures. And the need being present, and indeed urgent there has naturally arisen a strong demand for its satisfaction. Membership of an organized profession gives a practitioner a standard of ethics and a code of honour. Registration carries an obligation as to professional conduct whilst a registered practitioner is under direct control as regards methods of practice. Under the present conditions in India, on the other hand, the qualified practitioner is penalized, and the practice of dentistry is thrown open to foreigners free from any authoritative control and untrammelled by a code of professional ethics, and to ignorant and irresponsible amateurs.

Owing to the prolonged inaction of Government, a large body of quack dental practitioners is already in existence, and attempts are being made to organize these irregulars into a "dental profession", and to issue certificates to them after a very inadequate course of training. The continuance of these attempts can only lead to abuses such as those said to be prevalent in certain states of the U. S. A., private dental "Colleges", independent of the State University, being allowed to confer "degrees." In the states, however, the holders of such degrees are debarred from practice, and are merely "manufactured for export."

It has therefore become necessary to insist on the fact that a properly trained and qualified profession is required, and that prospective members of such a profession have a right to as high a standard of teaching and as high a professional status as

that of the other liberal professions in this country, and as that offered in dental surgery to their nationals by other civilized countries.

The conclusion come to by the Departmental Committee of 1919 to enquire into the evils of dental practice in Great Britain by unqualified persons, and which resulted in the Dental Act of 1921, may here be quoted

"In conclusion, we wish to state very strongly that, in our opinion, the state cannot afford to allow the health of the workers of the nation to be continuously undermined by dental neglect. Steps could be taken without delay to recognise dentistry as one of the chief, if not the chief, means for preventing illhealth, and every possible means should be employed for enlightening the public as to the need for conservative treatment of diseased teeth. The dental profession should be regarded as one of the outposts of preventive medicine, and as such encouraged and assisted by the State. Treatment should be rendered available for all needing it. The present anomalous position in which an uneducated, untrained person can practise as a dentist, performing surgical operations on the teeth and jaws, doing untold damage and casting undeserved odium and dishonour on a scientific profession, is intolerable, and should be dealt with immediately."

(2) The existence of Public Services for the official practice, and of Medical Acts to control the unofficial practice of Medicine and allied faculties, with the conspicuous exception of Dental Surgery.

Public Services have long been established in India for the practice of medicine, surgery, and several specialities of these, and more recently bio-chemistry, radiology, hygiene, and sanitation; Dental Surgery alone, of all the healing arts, being unprovided for by a public service or branch thereof, although in Great Britain we have lately seen the institution of

a public medical service quickly followed by that of a public dental service.

Within recent years Medical Acts have come into operation to control and protect the private practice of medicine and surgery. Dental Surgery, perhaps most of all the scientific professions, needs effective control and protection, being, chiefly no account of its mechanical branch, particularly liable to exploitation by incompetent and unprincipled practitioners. Dental surgery however has unavoidably not been included under the Medical Acts there being at the time they were passed no Indian dental profession in existence, and of course no register of dental surgeons.

British qualified dentists practising in India naturally regard the exclusion of dental surgery from the scope of the Indian Medical Acts as an injustice to their profession. A provisional form of petition to Government was circulated amongst British registered dentists in India early in 1915, asking for the registration of dental surgeons, and outlining suggestions for a Dental Act. It was considered however by some of the members of the profession that Government would be unlikely to introduce legislation with other than the following two objects in view—the guidance or protection of the public, and the creation or protection of an indigenous profession. It would seem that an essential part would be the training of dental surgeons in the country and the granting of a diploma. Under any Dental Act that might be passed all British Empire qualifications would doubtless be admitted to the Indian register, at any rate for a term of years. However this may be, the matter of the petition appears to have been dropped.

Efforts have been made from time to time by the Madras Medical Department to induce the Madras Government to meet the demand for dental service by the constitution of an organized dental profession. A brief account of these attempts and the Government attitude thereto follows.

For many years the response of Government did not go beyond the teaching of elementary dental surgery to medical students and the establishment of a dental department in connection with the Presidency General Hospital. Since the termination of the War selected Civil Assistant Surgeons have been given a short period of training in this dental department, and put in charge of dental clinics at certain Headquarters Hospitals in the Districts of the Presidency.

Their repeated instructions for the drawing up of reports and estimates indicate however that Government really did appreciate the desirability of the creation of a properly trained and regularized profession.

(3) The Professorship of Dental Surgery, under the Madras Educational Department, was inaugurated in 1833, and in 1888 a clinic was started at the General Hospital for the practical instruction of students in the minor operations of dental surgery. A department of the General Hospital for the treatment of dental patients was thus constituted.

Lectures on dental anatomy and surgery were delivered in the College, attendance at which was compulsory for military pupils and apothecary students, and optional for others. The dental department of the Hospital was open on three mornings in the week during the session of the College, when the Professor of Dental Surgery attended for the teaching of students and the treatment of patients. The patients were drawn from all the poorer classes of Madras, and in August 1899, soldiers from the Station Hospitals were admitted for treatment.

The dental department was lodged in one room at the hospital, the subordinate staff consisting of one ward-boy. No records were kept until the end of 1894. The annual number of patients increased from 900 in 1895 to an average of about 2,200 in 1916 and 1917. In July 1918, a second dental surgeon

was appointed and from that time the annual number of admissions steadily increased until in the years 1922, 1923 and 1924, the average annual admissions reached 4,585.

The treatment carried out was mainly extraction (for dental caries, and its sequelae, impacted lower third molars, and pyorrhoea alveolaris), and scaling. From 60 to 100 fillings were done each year, an occasional Hammond splint fixed and a few simple regulation cases and so on undertaken, besides the treatment of gingivitis, ulceration, etc. After the appointment of a second dental surgeon the yearly average of fillings rose to about 140.

In 1906, the regular administration of ethyl chloride as a general anaesthetic was commenced, chloroform having previously been given for multiple extractions of carious teeth, mostly required for British soldiers. From then until the end of 1924, ethyl chloride was administered for 3,230 operations, without accident, a special anaesthetist being appointed to the dental department in 1923. The ethyl chloride and ether sequence, and chloroform, were also occasionally administered, and cocaine was employed as local anaesthetic.

The years 1910 to 1912 saw the transference of the control of medical education from the Educational to the Medical Department, the inclusion in the dental surgery classes of the L. M. & S. and M. B. B. S. students and the reduction of the course of lectures on dental surgery from about 30 meetings to 15. At the same time as the last change the practical teaching was regularized, each member of the College dental surgery class being required to attend the dental room at the Hospital on at least 15 days. The Professor's recommendation had been a minimum of 12 attendances per month during 3 months.

During the war proposals were made through the Superintendent of the General Hospital for the regular inspection and

treatment of the men of the Indian Defence Force, the dental department to be kept open for this purpose daily throughout the year, if necessary, but these proposals did not meet with the approval of Military Authorities.

(4) The Instructions of the Madras Government to officers of the Madras Medical Department to draw up schemes and prepare estimates for the establishment of a dental school and hospital, the institution of a dental diploma, and registration of dental surgeons.

As early as July, 1888, Surgeon-General Bidie, in a memorandum to the Madras Government, expressed the opinion that the profession of dental surgery was one "in which the natives of this country would be likely to excel if put through the usual course of training and tuition adopted in England," and he suggested that "in the case of dentistry being regularly taught as a profession, it will be necessary for the University to arrange to grant a licence to men who qualify."

In reply of Government to this memorandum dated 30th August, 1888 (nearly 39 years ago), they "approve of the University being invited to establish a degree of licentiate in the subject." Nothing, however, appears to have been done.

In 1906 the first serious effort was made to grapple with this question, and in 1907, 1908 and 1909, were prepared and submitted to Government for the institution of a dental school and hospital and the granting of diplomas in dental surgery.

The final scheme proposed was more or less in the nature of an experiment, and was hoped preparatory to the granting of a licence to practise and the registration of practitioners by the Government of India.

Two curricula were suggested; one for a full course in dental surgery, and one, with a two years' course, for the holder of a medical diploma, to be termed provisionally

"Licentiate in Oral Surgery," on similar lines to the Licentiate in Sanitary Science.

Estimates were drawn up in detail of cost of equipment of hospital and school, provision for staff, etc.

The scheme, with comments by the Director of Public Instruction, the Principal of the Medical College, and members of the College Council, is set forth in G. O. No. 368, 22nd June, 1909. It appears to have been turned down by Government without further comment.

Proposals for the establishment of a dental school and hospital have also from time to time been submitted to Government by the Medical Departments of Bengal and Bombay. In reply to enquiries the Inspector-General of Civil Hospitals, Bengal, wrote in August, 1913, "A proposal to establish a dental hospital and school in Calcutta was submitted for the sanction of Government in 1908, but, as Government rejected it, everything ended there."

(5) The Miller Scheme, and subsequent modifications thereof.

A further determined effort was made in Madras towards the end of 1918 by the Surgeon-General to direct the attention of Government to the important matter of dental training, and Lieut.-Col. A. Miller, I.M.S., Principal of the Medical College, was instructed to draw up scheme in consultation with the Professor of Dental Surgery.

The idea was to develop a dental department in connection with the Medical College for the training and licensing of dental surgeons as soon as possible after the War, and the proposals were forwarded to the Government of Madras through the Surgeon-General on the 3rd October, 1918. By the date of occupation of Cambrai they were in the hands of Government.

The report mentioned the fact that the importance of dental surgery was then so well recognized in Great Britain that the larger medical schools either had dental schools of their own (*e.g.*, Guy's and London), or had working arrangements with dental hospitals so that patients might easily be sent for dental surgery treatment; also that there was no dental school at all in India. It referred to the advantage it would be to turn out qualified dental surgeons before dental quackery had time to become thoroughly established, so keeping open a clear field for the development of scientific medicine in this country.

The outlines of the scheme were as follows:—

1. Course and Diploma.

In Great Britain the course for a College of Surgeons Licentiate extends over 4 years, and that for University Degree over 5 years. It was therefore recommended that a 4 years' course be prescribed, and that the Faculty of Medicine be moved to ask the University to institute a Licentiate in Dental Surgery.

2. General Educational Qualification.

The same as that required for the M.B. B.S., or L.M. & S., *viz.*, the Intermediate Examination in Arts of Madras University, or any examination recognized by the General Medical Council of the United Kingdom.

3. Licentiate in Dental Surgery.

DETAILS OF THE COURSE.

1st Year.

Chemistry. A special syllabus to be arranged, including inorganic and organic Chemistry.

Physics. The same course as for the 1st M.B.B.S.

Dental mechanics and Laboratory work.

Dental hospital practice. After the first six months.

2nd Year.

Dental materia medica.

Dental mechanics.

Dental metallurgy.

Laboratory work in dental mechanics.

Dental anatomy and physiology.

Dental hospital practice.

3rd Year.

Anatomy. Lectures and dissections (head and neck and one other part).

Physiology. Same lectures as for the M.B.B.S.

Dental hospital practice.

Clinical surgery at a General Hospital.

Dental histology.

Dental anatomy and physiology.

Practical histology.

4th Year.

Surgery.

Clinical surgery and pathology at a General Hospital.

Dental Hospital practice.

Dental pathology, surgery and prosthetics.

Operative dental surgery. Lectures and demonstrations.

Dental bacteriology.

Anæsthetics.

EXAMINATIONS.

After 1st Year. Physics. Chemistry.

„ 2nd „ Dental metallurgy.

Dental materia medica.

After 3rd Year	Physiology and histology. Dental anatomy, histology and physiology. Dental mechanics.
„ 4th „	Surgery. Dental surgery, including prosthetics. Operative dental surgery and anæsthetics. Dental pathology and bacteriology. Dental therapeutics.

STAFF.

(1) Demonstrator of Dental Mechanics and Curator of Laboratory.

Laboratory Assistant.

(2) Two Dental Surgeons, Professors of the specially dental subjects.

Two Assistant Dental Surgeons, Assistant Professors.

(3) Nurses.

(4) Menial staff.

The Dental Surgeons to have a position similar to I. M. S. officers. At first one senior and one junior dental surgeons to be appointed, and the staff increased as required. The Assistant Dental Surgeons to be graded like Civil Assistant Surgeons.

The following subjects to be taken by the ordinary staff of the Medical College:—Chemistry, Physics, Dental Metallurgy, Anatomy, Physiology, Histology, Dental Materia Medica, Surgery, Clinical Surgery, Pathology, Dental Bacteriology.

STUDENT'S FEES.

The fees in Great Britain (e.g., Dondon Hospital Dental School) for a 4 years' course are higher than fees for a 5 years'

medical course. This is due to the 2 years' course in dental mechanics, in which a considerable amount of material has to be used. The fees in Madras might be made the same as for the Medical School. Dental students would be put to less total expense in that the course occupies 4 instead of 5 years. Registration and Athletic Club fees to be the same as for medical students.

4. Certificates in Dentistry.

(A subsequent modification of the Miller Scheme.) A short course, on the lines of the Sub-Assistant course in medicine and surgery, to qualify men for work in district hospitals, etc. This course to be a modification of the Licentiate course, to take 2 or 3 years.

Both classes of students could be accommodated in the same buildings, the general subjects being taught at the Medical College.

In November, 1920, estimates were called for of buildings required, cost of appliances, materials, etc., and a complete estimate of requirements and of the cost of special dental fittings, instruments and materials submitted.

In May, 1922, after further consideration of the scheme, the Surgeon-General stated that, as the dental school could not be made self-supporting, the scheme had to be shelved for the time being. At about the same time the Surgeon-General with the Bombay Government stated that the details regarding the establishment of a dental school at Bombay had not been worked out, as the project had been withheld owing to financial stringency.

In December of the same year, however, the estimates were again called for by the Madras Government, and again worked out in detail, giving the latest prices of the most modern requirements, so far as was compatible with the strictest economy.

Particulars of the cost of buildings, or of adapting existing buildings, fittings for water-supply, electric installation, etc., were to be supplied by the P. W. D.

In July, 1923, the whole scheme was thoroughly reconsidered by the Surgeon-General, the personnel and salaries of the staff, etc., provisionally settled, and the papers finally laid before Government.

A Government Order issued on 8th September, 1923, states "The Government consider that the scheme for opening a dental school and hospital in Madras should be taken up along with the scheme for the new General Hospital."

The Public demand for dental training and for a profession of dental surgery.

A Government Memo. dated 4th February, 1920, had called for definite information as to the demand for a dental school or for dental surgeons in Madras City or the Districts.

Accordingly a letter was circulated to Medical practitioners, the heads of colleges and others, asking for a statement of their views as to (1) the need for dental surgeons, and (2) the demand that exists for dental school.

About 30 letters were sent out, and 23 replies were received and laid before Government. They showed that a very considerable demand for dental surgeons existed in the Presidency, and that there would not be much difficulty in getting candidates for dental training.

A list of applications for teaching in dentistry, with letters from the applicants, was also furnished.

The demand for dental treatment is also shown by the considerable number of men who have had a short period of training under unregistered practitioners, or who have served as dental mechanics, and are now practising for themselves in

Madras city, where there are numbers of ignorant people engaged in supplying unskilfully made artificial teeth.

(7) The Post-Collegiate Course in Dental Surgery for Civil Assistant Surgeons and Sub-Assistant Surgeons.

In May, 1920, at the urgent request of the district authorities for a dental service, a six months' post-collegiate course in dental surgery was started at the Madras Medical College, for the training of medical subordinates to be put in charge of dental clinics at the district headquarters hospitals of the Presidency.

The course consisted of daily attendances in the dental room of the General Hospital for observation and practice, demonstrations, and a course of 15 lectures on dental surgery and 5 on anaesthetics, the teaching staff consisting of the Professor of Dental Surgery, the Second Dental Surgeon, and an instructor in anaesthetics. Special demonstrations were given of impression taking, model-casting, and the construction of Hammond splints.

Four Civil Assistant Surgeons and one Sub-Assistant Surgeon were trained in 1920, and the course was repeated in 1921, when three Civil Assistant Surgeons, one Sub-Assistant Surgeon, and one private pupil, were trained.

The holding of these courses led to an increase in the number of patients treated at the hospital, and to a good deal more conservative work being undertaken.

It also brought the dental department more into line with regular dental hospitals, in that a considerable proportion of work could be done by the students themselves, which was of course out of the question before the special course was started.

It would in fact, have constituted a useful nucleus for later expansion into a dental school. However, the course was discontinued in 1922, and in June, 1923 Government issued an

order stating that "Only two courses of training have been held so far and the scheme is now held in abeyance on account of the present financial stringency."

The Officers having been trained and posted to the various hospitals, it became necessary to provide them with dental furniture, apparatus, and materials.

Dental chairs, to designs requiring only carpenter's and very simple blacksmith's work, were constructed at the Madras Central Jail, and supplied to the headquarters hospitals, together with the minimum requirements in the way of dental apparatus, instruments, and materials and by the end of 1922 six dental clinics, to start with, were established.

(8) The Royapuram Dental Hospital and the designs for a Dental Department in the projected General Hospital at Egmore.

Owing to the accommodation available at the Government General Hospital, having become inadequate to the increasing scope of the work of the department for the treatment of dental disease, this department by order of the Surgeon-General dated 24th March 1924, was transferred from the General Hospital to the recently erected buildings of the Government Royapuram Hospital.

The premises allotted to the new dental department comprised a modern hygienic operating room, well lighted, with adequate water supply and electric installation, a second room for the examination of patients and use as office, etc., a retiring room for female patients and male and female waiting rooms with lavatories. Three oil-pump chairs of the latest patterns were installed, with a corresponding equipment of dental engines and other instruments and appliances.

The premises were self-contained, and the department could now be described as a Dental Hospital, *albeit* on a small scale. The

staff consisted of a Professor of Dental Surgery, Medical College, as First Dental Surgeon, the second Dental Surgeon, and the Dental Anaesthetist. The services of nurses and peons were provided by the Superintendent of the Royapuram Hospital.

The department was opened for the reception of patients on 9th April, 1924, and in a few months the number of admissions had about reached the level attained before the change.

This change to more up-to-date premises had been originally intended to be provided for by the projected new buildings for the Madras Government Hospital, and in connection with this scheme, the Government Architect designed a dental department of the requirements indicated by the Professor of Dental Surgery. The designs were being discussed about the time that the Miller scheme was mooted, and provided for what was intended to be a more efficient General Hospital Dental Department with facilities for expansion when necessary.

They comprised a conservation room accommodating from 12 to 15 chairs, extraction and anaesthetic rooms, officers, dental laboratory, waiting rooms, etc., as this was regarded as sufficient provision, during the first few years at least, for a dental hospital such as would be required under the Miller scheme.

The department was to be self-contained, occupying the upper storey of a wing of the Out-patient Department, and was to have its own entrance hall and exits.

At one time there seemed to be a possibility of the building of this Out-patient Department being pushed on as a matter of urgency, and it was when this prospect had definitely faded that the provision was made at Royapuram.

(9) The collapse of the whole project-dental hospital, dental school, diploma, and registration.

The scheme seemed to be at last on the eve of fruition, when the G.O. of the 8th September, 1923, was issued deferring

the question of opening a dental school and hospital at Madras for consideration along with the scheme for a new General Hospital.

The last mentioned undertaking was first mooted in 1909, and, after many vicissitudes, appeared to be postponed indefinitely; so there seemed but little prospect of anything being done in the near future for dental education or organization in Madras.

Similar efforts in the other Presidencies have apparently met with a like fate, and the chief hope would now seem to lie in the possibility of inducing the Government of India to inaugurate a scheme for the whole Empire and bring in a bill on the lines of the Dentists' Act (Great Britain) of 1921, the model on which other Dental Acts in the Colonies are now being framed. This would of course be a much simpler matter if dental school and hospitals had already been started in the Presidency towns. In any case, before such an Act could come into operation, schools affiliated to the Universities and hospitals would have to be established.

There may still be a chance of something of the kind happening as signs of activity are again evident in Calcutta and Bombay, and quite lately a statement has appeared in the Press that the Madras General Hospital scheme has been revived as a plan for re-building the General Hospital on the present site. If the scheme should this time materialize, it is to be hoped that the dental department will not be lost sight of.

In Lighter Vein.

Leisure.

A peasant who lived miles from the doctor woke him up in the middle of the night.

Doctor :— Why did you come so late ? Is it so urgent ?

Peasant :— No but we are so poor, and I have heard how busy you are in the day time. I thought it might be cheaper to come at night, as you would have more time.

" No, thanks, I don't want a man who smells of scent. I want one who smells of petrol."

— *En Rolig Half Timma*, Cothenborg.

" That woman is the most awful actress I ever saw," said the mild-mannered man to his neighbour.

" That lady is my wife " replied the neighbour.

" I am wrong," said the mild-mannered man : " she is a good actress struggling with a rotten play, I wonder what fool wrote it."

" Unfortunately, I am the author," said the neighbour, simply.

" Where have you been the last six years ? "

" At College, taking medicine."

" And did you finally get well ? "

A wealthy elderly man went to a rejuvenating expert and asked :
" Can you make me twenty-five again ? "

"Yes" was the reply, "but it will cost you a thousand guineas."

"Can you make me eighteen?"

"Yes; but that will cost you two thousand guineas."

"All right, then. I'll have the operation for eighteen."

A few months later the expert called for his money.

"Nothing doing," said the patient "I am under age, and if you say I am not I'll sue you for fraud."

The Scotch patient was fumbling in his pocket.

"You don't need to pay me in advance", said the dentist.

"I'm no going to", was the reply. "I'm only counting my money before you give me the gas."

A lady went into a gentlemen's outfitters and said to the assistant behind the counter:

"I want to get some collars for my husband, but for the moment I do not remember the size."

"Thirteen and a half, madam?" suggested the assistant.

"That's right," replied the customer, "but how in the world did you know?"

"Men who let their wives buy their collars for them are generally about that size, madam."

Kept his word.

"Yes, the doctor swore he'd put me on my feet again in a month."

"Well, didn't he do it?"

"In a literal sense he did, I had to sell the car to pay his bill."

A bit of Anatomy.

"Fanny", said the teacher, "what is the spinal column?"

"The spinal column," said Fanny, "is what my head sits on one end of and I sit on the other."

Now she refuses to speak.

She: "So many men marry for money. You wouldn't marry me for money, would you, dearest?"

He (absently): "No, darling; I wouldn't marry you for all the money in the world."

Suspicious.

She: Dearest, what's the meaning of that word on the lovely ring you gave me?"

He: "'Faithful to the last.'"

She: "The last! How perfectly horrid of you! And you've always told me that I was the very first."

Crime and Punishment

Lord Russel, in the early part of his career, was in court during the trial of a case of bigamy, and one of the counsel in the case, turning to him asked, in a hurried whisper: Russel, what's the extreme penalty for bigamy?" "Two mothers-in-law," was the witty reply.

An Eastern 'Bull'

One night Shirazi thought he saw a burglar in his room, and shot at him. In the morning he found that he had sent an arrow through his own shirt, which hung by the window. Falling on his knees, he prayed fervently, I thank thee, Allah, that I was not in that shirt.

A Hopeless Case.

A virulent fever once took hold of an absent minded physician who never found time to take care of his own health. He felt his own pulse and through sheer force of habit muttered; The fellow is lost; that comes from the stupidity of people who never will call in a doctor till it is too late.

Very Hot.

A little town-bred girl spending her holiday in the country went out one morning early, accompanied by her cousin. The little girl was attracted by the sparkle of the dew.

"Kate", she exclaimed, "it's hotter than I thought it was."

"What do you mean?" said her cousin "Why, the grass is all covered with perspiration."

To much for him.

"This is a bit thick," said Billy Bates. "This morning the doctor ordered me to drink warm water an hour before every meal, and here I've been drinking for the last forty minutes, but I'll be jiggered if I can swallow another drop."

"The house shook", said the earthquake victim. "Cups and saucers flew all over the place, and—"

"Great Scott!" exclaimed a little man in the corner. "That reminds me, I quite forgot to post my wife's letter."

"Have you ever had a lesson by correspondence?"

"Rather—I never write to women now."

A man took two prescriptions to be made up at the Chemist's. "You'll be very careful to mark them properly, won't you?" he implored the Chemist. "You see, one is for my wife and the other for my horse—and I couldn't bear anything to happen to my horse."

A friend went to the undertaker to order a coffin for Pat Connell.

"Dear me," said the undertaker, "is poor Pat dead?"

"No he's not dead yet," the friend answered, "but he will die to night, for the doctor says he can't live till morning, and he knows what he gave him."

Poacher: I didn't—steal the duck. I just carried it home for a joke "

Judge: "A month for carrying joke too far."

The following notice has been posted at an electric station in Ireland:

"Beware" to touch these wires is instant death. Any one found doing so will be prosecuted.

An old lady who had been introduced in a university, felt somewhat puzzled as to how she would address the great man.

"Shall I call you 'doctor' or 'professor' she asked."

"Oh, just as you wish," was the reply; "as a matter of fact, some people call me an old idiot."

"Indeed," she said sweetly "but then, they are people that know you."

A surgeon, an architect, and a politician were arguing as to whose profession was the oldest.

Said the surgeon: "Eve was made from Adams rib, and the surely was a surgical operation."

"Maybe," said the architect, "but before that, order was created out of chaos, and that was an architectural job."

"But," interrupted the politician, "somebody created the chaos first!"

A reporter asked a Hollywood actress if she thought thirteen an unlucky number.

The actress exclaimed: "Good gracious no; my present husband is the nicest I ever had."

"You were very kind to lend me that poundnote. I feel I can never repay you."

"Eh? Why on earth didn't you say that at first?"

"And if I refuse you, Cecil—will you commit suicide?"

"Well, that has been my usual custom."

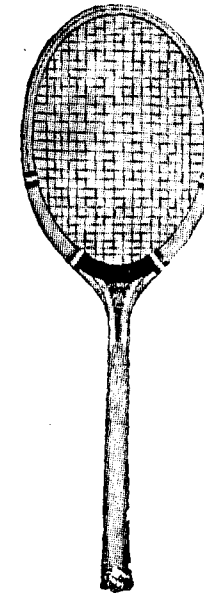
Unemployed.

The pickpocket in a Nudist Colony.



"SHARMAN"

THE SIGN OF SPORTS SERVICE



The House for ideal and economical sports Goods on the market at the present day. Like the Rock of Gibraltar, our materials stand for much permanence and dependability.

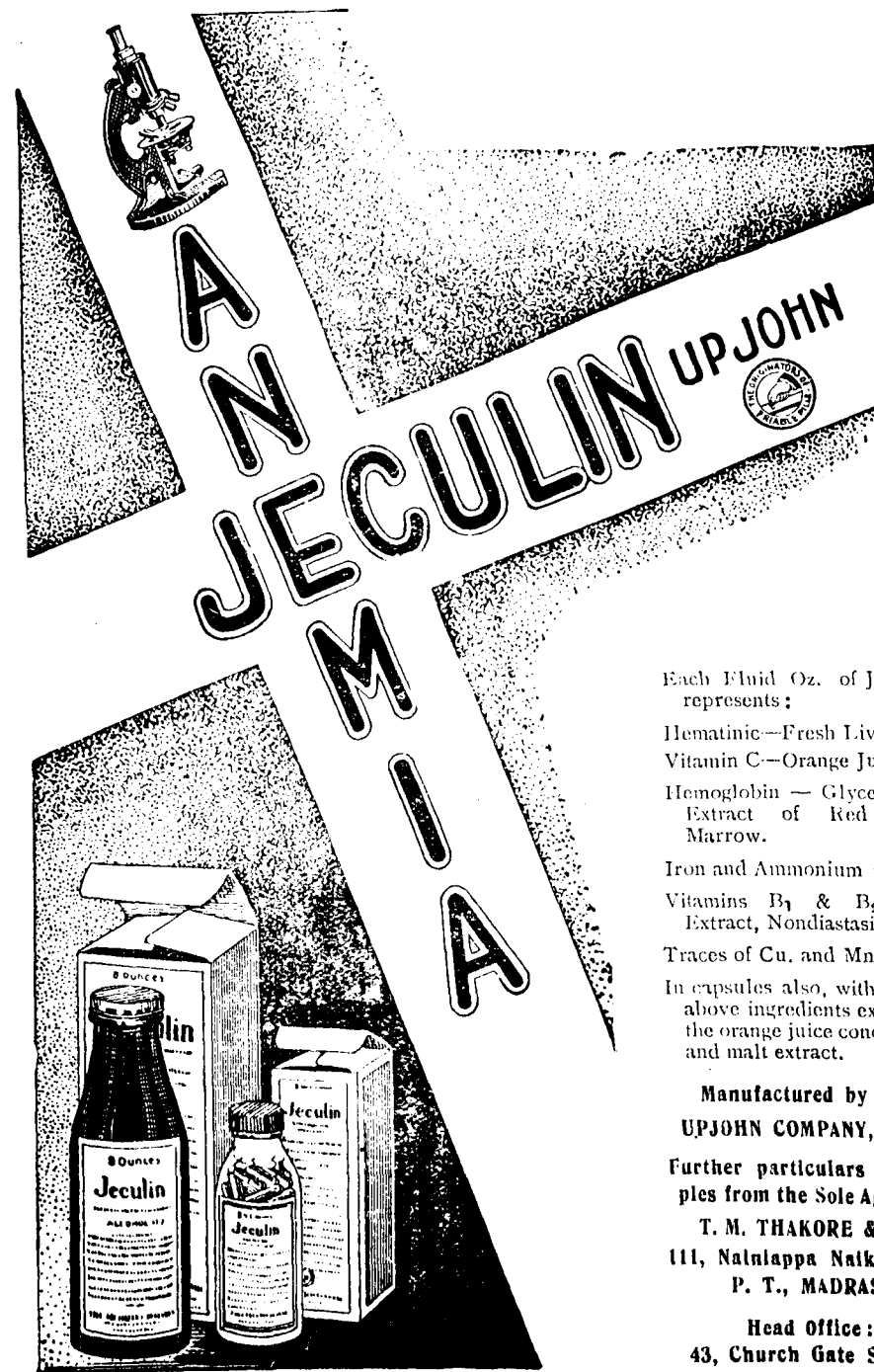
SHARMAN & CO.,

SPORTS SPECIALISTS,

MOUNT ROAD, MADRAS & COIMBATORE.

PHONE: 3544

When writing to advertisers, please mention this Magazine.



Each Fluid Oz. of Jeculin represents :

Hematinic—Fresh Liver

Vitamin C—Orange Juice

Hemoglobin — Glycerinated Extract of Red Bone Marrow.

Iron and Ammonium Citrate.

Vitamins B₁ & B₂—Malt Extract, Nondiastasic.

Traces of Cu. and Mn.

In capsules also, with all the above ingredients excepting the orange juice concentrate and malt extract.

Manufactured by the
UPJOHN COMPANY, U.S.A

Further particulars & Samples from the Sole Agents :

T. M. THAKORE & Co.
111, Nainiappa Naik Street,
P. T., MADRAS.

Head Office :
43, Church Gate Street,
Fort, BOMBAY.

ZEISS

MICROSCOPES

AND

ACCESSORIES

FOR

ROUTINE & RESEARCH

ALSO

Photomicrographic Apparatus

Micro Projection Apparatus

Ophthalmological Apparatus

Operation Lamps

Punktal Spectacle Lenses

Field and Opera Glasses

Magnifying Lenses

Photographic Lenses

Surveying Instruments

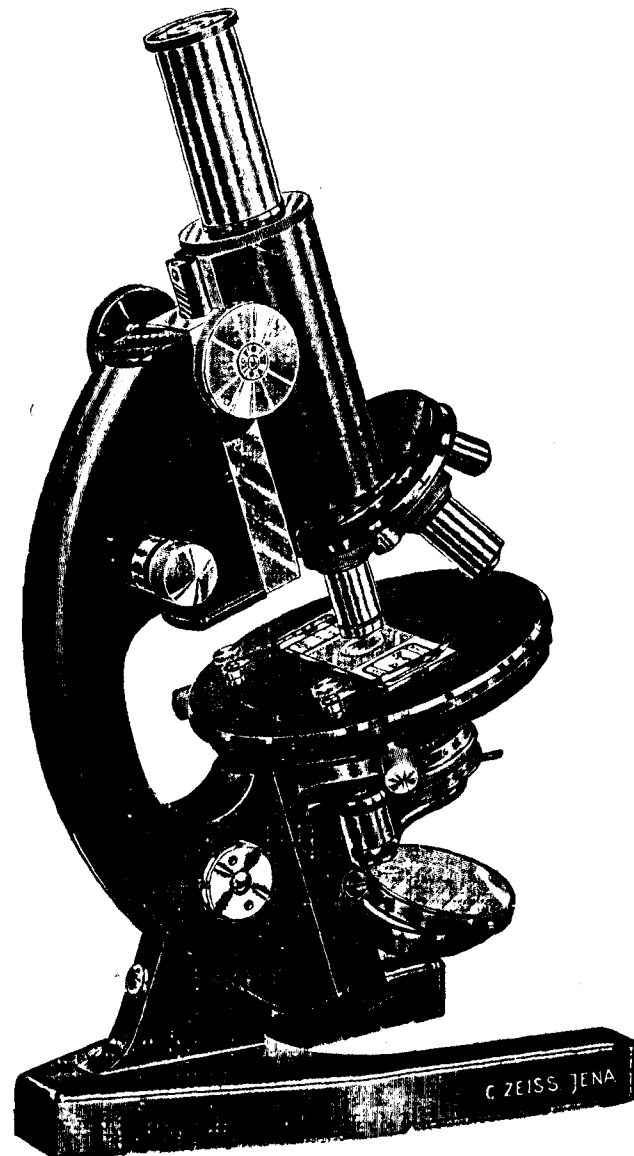
Haemocytometers

Epidiascopes

Refractometers

Polarimeters

Etc., Etc.



Catalogues Free on Application.

SOLE DISTRIBUTORS IN INDIA, BURMA, CEYLON:

ADAIR, DUTT & CO., LIMITED,

MOUNT ROAD

MADRAS.

CALCUTTA & BOMBAY.